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ABSTRACT

The guide is one of a series developed in a pilot project to integrate career education concepts with traditional subject matter and topics in elementary grades K-7 and in special education. Developed by teachers in the Radford, Virginia, schools, the units make use of resource persons from outside the school, occupational information, interviewing and reporting techniques, parent and family involvement, hands-on experiences, role playing, and field trips. All units are organized in a column format which provides an introductory motivating activity with related resources and materials. The lessons are based on content questions, which are explored by specific techniques and activites and supported by resource materials in all media. Not all data on materials are complete. For the sixth and seventh grade levels, the units are: advertising, art, banking, careers through knowledge of simple arithmetic, music, cartography, chemistry, communications, the dictionary, ecology, food services, geometry, Greek and Roman mythology's relationship with today's industry, the Lynchburg foundry, machines, magnetism and electricity, measurement and the metric system, the newspaper, nuclear energy, oceanography, and weather. (MDW)

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RADFORD CITY SCHOOL'S CAREER EDUCATION PROJECT
RADFORD, VIRGINIA 24141

INTRODUCTION TO ELEMENTARY CAREER EDUCATION UNITS

The Career Education Program of the Radford City Schools is a pilot project of research and development for career education techniques and materials. It is funded through a grant from the Office of Education which extends until December 14, 1974.

The unit approach was utilized to implement career education concepts on the elementary level. A total of 99 career education instructional units have been developed by the Radford teachers. These units were designed for use in grades K-7 and special education.

The units were developed around specific topics (clothing, weather, etc.) and incorporated the following elements:

1. Subject content relationships
2. Occupational information
3. Resource speakers
4. Interviews and reports
5. Parent and family involvement
6. Hands-on and other sensory experiences
7. Role playing and simulation activities
8. Career related field trips

The majority of the units contain more activities than would normally be included in a unit, therefore the teacher can select the most appropriate activities for her particular students. The length of time that should be spent on each unit is approximately four to six weeks.

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CAREER EDUCATION PROGRAM

RADFORD CITY SCHOOLS

UNIT TITLE: FOOD SERVICES

APPROXIMATE GRADE LEVEL: GRADE 6

PROJECT SITE: RADFORD CITY SCHOOLS

PROJECT DIRECTOR: DR. JAMES E. RUTROUGH, SUPERINTENDENT

PROJECT COORDINATOR: RANDY WRIGHT

THE CAREER EDUCATION PROGRAM
THE RADFORD CITY SCHOOLS
1612 WADSWORTH STREET
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CE004002

INTRODUCTION TO: Food Services

This unit on Food Services is planned for a sixth grade class, but with alterations it could be used on other grade levels. The unit begins with a study of nutrition as this age group will eat those foods which appeal to their taste and convenience unless they have guidance in understanding the relationship of a well-balanced diet to health and strength.

The study of nutrition gradually leads to a study of food preparation in the home and finally to the food industry and the variety of associated occupations. Emphasis is placed on food producers and food service because of the great number of occupations involved.

Objectives:

1. To help students understand the importance of a well-balanced diet to health.
2. To help students develop an interest and awareness of the various job opportunities relating to food service.
3. To help students understand the importance of food services to the individual and the community.
4. To help students develop the attitude that all work has dignity and makes a contribution.
5. To review basic food groups and daily requirements of each.
6. To help students learn to plan menus.
7. To help students become conscious of food preparation in the home.
8. To help students become aware of the dependence of people on the food industry.
9. To help students become aware of the occupations associated with food service.
10. To help students relate the jobs associated with the food industry to themselves and their likes, dislikes, and abilities.

BROAD OBJECTIVE: To help the students become aware of the importance of a well-balanced diet.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. What are you? (You are what you eat)	Class discussion about "what each person is." Body is many cells. View microscopic slides of different human body cells. Display posters of malnourished individuals vs. nourished ones. (Animals)	Human body model. City Health Director, Dr. Mary Tom Long. College Home Economics instructors. Book: Cobb, Cells Zappler, From One Cell to Many Cells. Pamphlet: Your Food-Chance or Choice? Booklet: How Your Body Uses Food.
2. What are the kinds of food our bodies need?	Students make a wall chart to include the foods(protein, fat, carbohydrates, water minerals, vitamins) and why we need them. Produce skits in class to show many ways of using energy.	Book: Leverton, Food Becomes You. Filmstrip: You and Your Food Young American Film
	Display wall chart "How Your Body Uses Vitamins."	Health Education Guide Grades K-6 State Board of Education

CONTINUED

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
3. What are the four basic food groups and the daily requirements of each?	Display poster of 4 basic food groups.	Text book: Laidlaw, Health, 1966, Grade 6 Chapters 4, 5 and 6, p. 58-108.
	Make paper mache foods to illustrate the 4 main groups.	
	Make tests for nutrients in food.(Class demonstration)	Iodine and bread-turns starch blue. Burn mashed fruit and carbohydrate is ash. Burn protein for bad smell.
	Students keep a record of all the food they consume in a 24-hour period and then evaluate what they have eaten in terms of daily food requirements and balanced meals.	Charts on wall for reference. Booklets on food passed out.
	Each pupil must plan a balanced menu for one day.	Dietician will be resource person at this point.
	The class together prepares school lunch menus for a week. School cafeteria manager will give assistance.	School cafeteria manager.
	Oral reports on food science and history of foods.	

CONTINUED

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
	The teacher should encourage the students to use recipes and to try preparing food at home. Possibly a collection of favorite recipes could be started.	Children's Cook Books in library.

BROAD OBJECTIVE: To help the students become more aware of foods in the home.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. What are things to be considered when planning a meal?	Class discussion of the range of food prices and differences from store to store.	
	Obtaining prices of items from the grocery.	
	Have students bring in empty boxes and cans which still have price on them.	Newspaper grocery ads.
	Discuss different methods of preparation. Have one mother come to class to discuss recipes and prepared mixes, etc., and the preparation of food in the home. Cooking time and food storage should be included.	Parents.
	Cook a dessert in the room. Invite teachers in to be served.	
2. How is a good eating invironment established in the home?	Practice table settings with each student having a turn.	
	Make centerpieces which might make a table attractive and interesting.	
	Make burlap place mats.	10 yards burlap.

CONTINUED

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
	Role playing activity portraying a typical family eating dinner.	
	Class discussion of good table manners.	Book: Book of Etiquette
	Home Demonstration Agent can come to class and explain her functions and also talk about meal planning and preparation in the home.	Resource Person: Home Demonstration Agent
	Students plan a meal and shop for the necessary items at several stores in order to spend the least amount of money.	

BROAD OBJECTIVE: To help the children become aware of the dependence of people on the food industry and the variety of occupations in this industry.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. Who are the food producers?	Class discussion of the various food producers and the areas in which food is produced.	Triggs Dairy Farm. A farmer
Farmers 1. Dairy farms 2. Cattle farms 3. Vegetable farms 4. Grain farms 5. Livestock(hog) farms. 6. Peanut farms 7 Fruit farms or orchards.	Make a map of the U.S. and indicate areas where food is produced. Put a sample of the food in the appropriate area on the map.	Agricultural expert from V.P.I. Books from library: Johnson, Lois, What We Eat Wise, William, Fresh, Canned and Frozen. Tannenbaum & Stillman, Feeding the City. Eberle, Basketful Hammond, Wheat From Farm to Market. Petersham, Let's Learn About Sugar Orr, Feed Day, Eating and Cooking Around the World. Smaridge, The World of Chocolate Buehr, Salt, Sugar & Spice Hastings, At The Dairy
	View filmstrips: (Eye Gate) The Baker The Dairyman The Butcher The Fruit and Vegetable Store	Filmstrips: (Eye Gate) The Baker The Dairyman The Butcher The Fruit and Vegetable Store
	Display study prints on the dairy helpers.	Study Prints-The Dairy Helpers

CONTINUED

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
2. What are the occupations associated with producting food?	Students begin making a series of occupational brochures portraying the various occupations. Farmer Farm manager Farm hand worker Rancher Agri-Extension Agent Vocational Agri Instructor Grain buyer Dairy manager Dairy workers Meat packers Home economist Home demonstration agent	Extension service at V.P.I. (Agriculture Instructor and Extension Agent) Dairy manager Field trip to dairy or to agriculture experimental station at VPI&SU Correspondence with food manufacturing company.
	Resource persons to visit class to give first-hand report on jobs and what they are like.	SRA work Widening occupational roles kit.
	Interview as many persons as possible who hold these jobs. Use instamatic camera to take pictures of the individuals interviewed.	
3. Who are the food distributors?	Exploration of the ways food is distributed to food manufacturers, produce companies, grocery chains, grocery stores, restaurants, institutions, and finally-the home.	Kroger Company official (Manager-Manpower) Sales representative(Mr. Hager) Small store owner (Ted Bess or Tony Darden)

CONTINUED

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
	a. By individual research and illustrated reports. b. Kroger manager to visit class and describe the distribution of food to the stores in the Kroger chain. c. Small store owner to tell class about distribution to his store.	
4. What are the occupations associated with distributing food?	Students make occupational brochures portraying the various occupations to add to the class collection. Truck driver Dairy products plant manager Milk truck driver Sales representatives	Truck driver who delivers to the school. Milk truck driver.
	Have local driver speak to class about his job.	Resource person.
5. What are the occupations associated with grocery stores and chains?	Students make additional brochures for grocery stores. Store manager Check-out clerk Meat cutter or butcher Assistant store manager Bag boys Produce manager Stocker Bookkeeper	

CONTINUED

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
	Have parents who may have these jobs come to class to talk about these jobs. Field trip to grocery store to see the different work stations, to gain an understanding of the responsibilities of each job and the importance of each job.	
6. What are the occupations associated with restaurants?	Make additional brochures for restaurant occupations. Waiter Waitress Bus boy Head cook-cook helper Manger Sanitation engineer Cashier Maintenance Hostess Menu Interview as many of these people as possible, take pictures of each and report to class. Have restaurant owner talk to class.	Restaurant manager (Hotel-Mr. Claflin) Filmstrip: The Waitress Waitress(Mrs. Barclay) A cook(Raymond Hill)

CONTINUED

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
7. What are the occupations associated with food preparation at institutions? School and college Hospital Prison(Bland-self-supporting prison by producing all the foods used)	Students make brochures on the additional occupations not covered already: Dietician Nutritionist Sanitary engineer Bacteriologist Maintenance Interview persons with these jobs.	Radford College cafeteria administrator(Ted Gardiner) Bland Correctional Farm official. Filmstrip: The School Cafeteria Worker.
	Field trip to school cafeteria to learn about the different jobs involved.	Mrs. Landrum, school cafeteria director. Hospital Dietician(special diets)
	Have Mrs. Landrum, cafeteria director, talk to the class.	
	View film which gives a picture of the entire food industry.	Film: Where Do I Go From Here? State - 66212
	Have students choose the one job in the food industry which appeals to them most(while considering interests and abilities) and act out the duties of(in costume, if possible) that job for the class.	

SUBJECT MATTER TIE-IN

Social Studies

1. Where food is produced
2. What foods must be imported
3. Food price control
4. Surplus food supplies
5. Farm subsidies
6. Big business
7. Follow wheat products from beginning(filmstrip in library)
8. Farming

Language Arts

1. Manners associated with eating
2. Vocabulary list(spelling, penmanship, and enunciation)
3. Conversation in restaurants, etc.
4. Advertising products
5. Write letters of inquiry to large food companies

Math

1. Comparison of different prices for different brands
2. of a given food.
2. Totalling sums on grocery lists
3. Budgeting money
4. Comparison of cost of food items when packed in different size packages.
5. Study measuring units used in a store
6. Comparison of Thursday ad prices with special attention to "sales." Calculations of savings on "sales."
7. Breakdown of food cost per meal.
8. Salaries of employees, use of cash register, coupons, and trade stamps.

Art - activities including

1. Paper mache foods
2. Making place mats
3. Making table centerpieces

Music

1. Dining music

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Petersham, Maud and Miska, Let's Learn About Sugar, New York: Harvey House, 1969.

Smaridge, Norah, The World of Chocolate, New York: Julian Messner, 1969.

Tannenbaum, Beulah and Stillman, Myra, Feeding the City, New York: McGraw-Hill, 1971.

Wise, William, Fresh, Canned and Frozen, New York: Parents' Magazine Press, 1971.

Yappler, George, From One Cell to Many Cells, New York: Julian Messner, 1970.

Health Education Guide, K-6, Richmond, Virginia , State Board of Education: 1971-72.

Health - 6, New York: Laidlaw, 1966.

2. Filmstrips: (Eye Gate Series)

The Baker
The Dairyman
The Butcher
The Fruit and Vegetable Store
The Waitress
The School Cafeteria Worker

3. Kits:

    SRA - WORK

    Widening Occupational Roles Kit

    SRA Occupational Briefs

4. Film: General Foods -

    "Where Do I Go From Here?"

CAREER EDUCATION PROGRAM

RADFORD CITY SCHOOLS

UNIT TITLE: ME----A CARTOGRAPHIST?

APPROXIMATE GRADE LEVEL: GRADE 6

PROJECT SITE: RADFORD CITY SCHOOLS

PROJECT DIRECTOR: DR. JAMES E. RUTROUGH, SUPERINTENDENT

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INTRODUCTION TO: ME----A CARTOGRAPHIST?

This unit written in contract from is designed for 6th grade Social Studies. The complete contract is given to each student, their designed grade is recorded, and work must be completed by a designated date. It shows the jobs involved in cartography. It helps develop the ability to read and interpret maps and globes.

BROAD OBJECTIVES:

1. To make students aware of present day careers in cartography.
2. To enable students to locate a place if given its latitude and longitude, to use map keys, and to secure different kinds of information from different kinds of maps (physical, political, special-purpose, etc.)

CONTRACT UNIT ON CARTOGRAPHY

NAME: ______________________________

I understand that in order to receive a minimum passing grade (D) for this unit of study, I must complete all of the tasks marked required on the list below. In order to receive a grade of C, B, A, one must in addition complete the optional tasks specified below as required for those grades. I also understand that each task completed must be turned in and will be rated on pass or fail basis. If the task does not pass, it must be done over or revised and receive a pass before credit is given.

D - Complete only required work.

C - Required work + 6 optional tasks and at least a D average on quizzes.

B - Required work + 8 optional tasks and at least a C average on quizzes.

A - Required work + 10 optional tasks and at least a B average on quizzes.

The grade I wish to contract for is _______________.

Parents Signature ______________________________

Signed ______________________________

I. Requirements:

1. A, B, C, student must take notes during class discussion.
2. Students must read carefully p. 325-330. The Social Sciences, Harcourt, Brace, Jovanovick. Do on paper questions p. 330.
3. Reading Requirements: (Related to Maps)
   (a) "Sea Rovers of the North", p. 64-70, Reading Power (Harcourt, Brace)
   (b) "Marco Polo's Great Adventure" p. 79-88, Reading Power (Harcourt, Brace)
4. View required films and filmstrips.
5. Field trip to drafting lab. at Community College.

II. Optional Tasks:

1. Make a chart showing the jobs in developing a completed map.
2. Make a vocabulary list with definitions of words related to cartography.
3. Write a two page report in ink on the topic, "How Maps Are Made". (World Book Encyclopedia)
4. Draw a map including longitude and laditude lines and color in the polar, temperate, and tropical zones.
5. Draw a population map. (Include a legend)
6. Draw a rainfall map with legend and scale.
7. Draw a physical map with legend and scale.
8. Draw a product map of a certain area of the world.
9. Draw a polar map with scale and legend.
10. Extra Reading:
    C=10 pages
    B=15 pages
    A=20 pages

    Suggested books for reading:
    Cutright, Living In The Old World.
    Ahlschwede, Exploring The Old World.
    McFall, Christe, Map Drawing.
    Oliver, John E., Map Drawing.
    Epstein, Sam, Maps.
    McFall, Christe, Maps Mean Adventure.
    Oliver, John, Maps.

11. Work and check three activity cards (as developed by teacher) related to map reading.
12. Make a booklet of several different types of ready-made maps.
13. (a) Write a formal business letter asking for an interview with Rand McNally & Company. (A prominent map making company)
    Progress in English, p. 355.
    (b) Role-play an interview with this company.
14. Fill out an application for a job as a cartographer with C. S. Hammond & Company. (Prominent map making company)
15. Using a school supply catalog, order a political map for use in a classroom.

16. Make a chart showing the history of map making from Columbus to present day.
17. As a small group, present to class an assembly line in making a map. (draftmen, lines, colors, words, numbers, symbols)
18. Make a relief map of one of continents using a salt-flour recipe.

AUDIO-VISUAL RESOURCES

Filmstrips:

Mapping The Earth Surface 55309

Maps and Their Meaning 44208

Maps Are Fun 87904

Maps, Land, Symbols, and Terms 43005

Maps and Globes D105

Interpreting Maps D106

Using The Right Map

Using Latitude and Longitude

Learning To Use Maps FS 366-371

Career Brief #181

Map Outline - "The World". Transparency Duplicating Book - Millihen Publicity Co.

BIBLIOGRAPHY

Follett Publishing Company, Exploring Old World.

Harcourt, Brace, The Social Sciences.

MacMillan, Living In The Old World.

Laidlaw Bros., Progress in English.

Harcourt, Brace, Reading Power.

Field Enterprizes, World Book, Vol. 13-M "Maps"

FILM LIST

Giant Step, The (1963) 16mm Sound 29 min.
Lochhead - Georgia Company
Motion Picture Film Library
Zone 30, B2 Building
Marietta, Georgia 30060

Mapping The World (1957) 16mm Sound 26 min.
U. S. Army Engineer District
200 East Julian St.
P. O. Box 889
Savannah, Georgia 31402

New Dimensions in Maps (1968) Sound filmstrip explaing 5 ingrediants of map - color, lines, words, numbers, and symbols.
Hammond Incorporated
Education Division
615 Valley Street
Maplewood, New Jersey 07040

CAREER EDUCATION PROGRAM

RADFORD CITY SCHOOLS

UNIT TITLE: GREEK AND ROMAN MYTHOLOGY'S RELATIONSHIP WITH TODAY'S INDUSTRY

APPROXIMATE GRADE LEVEL: GRADE 6

PROJECT SITE: RADFORD CITY SCHOOLS

PROJECT DIRECTOR: DR. JAMES E. RUTROUGH, SUPERINTENDENT

PROJECT COORDINATOR: RANDY WRIGHT

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INTRODUCTION TO: "Greek and Roman Mythology's Relationship with Today's Industry"

This unit is designed for the sixth grade level in social studies.

It shows the relationship of today's industries with the myths of the early Greeks and Romans.

Since this grade level studies old world history, it is important that they learn the contributions made to our occupations of today.

Motivating Activity and Background Material:

Read to the students about the main Greek Gods Have them look up in reference books and make reports on the various Gods.

Learn Greek and Roman names of the Gods.

Bullfinche's Mythology and book listed from the Library should be used for this activity.

BROAD OBJECTIVE: (1) To make students aware of present day careers as they relate to Greek and Roman myths.

(2) To make students aware of symbols from mythology used in relationship with occupations of today.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. What symbols from mythology often appear in trade marks used today?	Students discuss these trade marks which are reminders of famous myths. 1. Goodyear Tire 2. Socony Mobil Oil 3. American Medical Assoc. 4. Florists Telegraph Delivery 5. Mercury Auto 6. Missiles-Thor and Nika	World Book-Vol. M-13 p.814
2. Who were the Greek and Roman gods?	Show a chart of gods and goddesses in Greek and Roman mythology. (Teacher develop)	World Book Encyclopedia-Vol. M-13 p.816 Field Enterprizes 1964
	Students do individual research on mythology in library in books and encyclopedias.	Library books listed in Bibliography on Greek and Roman myths.
	Reports on particular god or goddess in which they're interested.	
Language Arts Tie-In		
What god or goddess interested you most?	Draw a picture illustrating the character as you see it. Write a story about it. Show overhead transparencies and filmstrips on Greek and Roman civilizations.	Filmstrips & transparencies. Ancient Civilizations: Greece and Rome (J.H. Pence Co.-Social Studies I)

CONTINUED: To help students gain an understanding of how we have come to possess and enjoy the comforts and conveniences of the present day through the influence of Greek and Roman mythology.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
3. What did the Greek god, Hermes, and the Roman god, Mercury contribute to our times?	Class discusses this myth of the messenger god and his winged feet whose symbol is used in florist telegraph delivery and Good Year Tire and Rubber Co. Other industries that could be studied at this time are: Ford's Mercury Space industry and missiles	Resource person from florist to explain how this delivery works.
4. How did the myth about Hephaestus and Vulcan inspire the pioneers in the blacksmith, automobile, rubber, and fuel industry?	Class discuss the blacksmith for the ideas which led to: 1. Iron industry and metallurgy (Lynchburg Foundry and Inland Motors) Students may ask Inland Motor representatives about Inland's connections with NASA.	Resource persons: 1. Leading metallurgy consultant(Wally Levi) Representative from Lynchburg Foundry shell shop. Representatives from Inland Motor(Ray Hoyt, Corwin Mathews)
5. How did the myth about Demeter and Ceres lead to: 1. Growing of flowers and vegetables?	Students read and discuss the myth of the god of agriculture. Discuss the growth of florist shops and nurseries, bringing in the careers involved, such as, flower arranging, decorating and landscaping.	Library books on myths(listed in Bibliography) Other resource people may be asked to come to the class to discuss their occupations: Interior decorator Architect Landscaper Nursery employee Florist arrange flowers

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
	Discuss the phases of farming and truck gardening in N.J.	Pamphlets from N.J. Chambers of Commerce.
	Discuss the growing of vast amounts of vegetables for refrigerated food industry and grocery chain stores, on Del-Mar-Va peninsula.	Representatives from A&P, Kroger, etc. could appear as resource people.
	Science tie-in - Grow beans in a glass jar to observe the root and the plant develop	Beans Jars Soil
5. 2. Making of breakfast foods?	Class selects its favorite breakfast foods. Make a chart showing pictures of breakfast foods and the ingredients necessary for body building.	Containers of breakfast foods and pictures from magazines to be used for charts. Poster board
3. Making of the calendar?	Class discusses early peoples' awareness of climate and seasons.	Almanacs
	How the calendar developed from early days to present time(bring in how the Greeks marked time with the Olympic games).	Books showing: Egyptian calendar Julian calendar Gregorian calendar
	Class can make the different calendars developed during the years and compare these with our calendar today.	World Book Encyclopedia Vol. C

CULMINATING ACTIVITY:

CULMINATING ACTIVITIES	RESOURCES AND MATERIAL
1. Students study the council meeting of gods and goddesses.	
Students make costumes representing gods and goddesses and conduct a council meeting of gods and goddesses.	Materials needed:
Students write dialogue for the council meeting.	
2. Along with this, other students could represent industries and careers of today that relate to the myths studied.	
Students make costumes or items representing the industry or career.	Ex. of materials: 1. Tire-Goodyear Rubber Ind. 2. Cardboard Mercury automobile 3. Missile out of tin cans from cafeteria.
Students write the dialogue to go with the council meeting.	
The culminating activities could be performed in an assembly program for the other classes.	

The last part of this unit could develop into another unit showing how the early Greeks originated the Olympic games and how they have influenced recreation, sports, and body building. Also, the many careers stemming from them.

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Green, R. L. Heroes of Greece and Troy. Henry Z. Walck, 1961.

Hoffman, A. S. The Book of the Sagas. E. P. Dutton.

Lowrey, J. S. In the Morning of the World. Harper & Bros., 1944.

Sellew, C. F. Adventures with the Gods. Little, Brown & Co.1945.

White, A. T. Golden Treasury of Myths and Legends. Golden Press, 1959.

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Baker, E. K. Stories of Old Greece and Rome.

McGuire, Edna. Glimpses into the Long Ago.

Southworth and Southworth. America's Old World Background.

Follett Publishing Company. Exploring Old World.

MacMillan Company. Living in the Old World.

Field Enterprizes. World Book-Vol. 13-M - Mythology.

Filmstrip and Transparency Set -

Ancient Civilizations: Greece and Rome. J. H. Pency Company.

CAREER EDUCATION PROGRAM

RADFORD CITY SCHOOLS

UNIT TITLE: ECOLOGY

APPROXIMATE GRADE LEVEL: GRADE 6 OR 7

PROJECT SITE: RADFORD CITY SCHOOLS

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INTRODUCTION TO: ECOLOGY

This unit is written for a seventh grade science class and begins with a study of land biomes. The main objectives are to cause the students to become aware of the need for the protection of our natural resources and to acquaint the students with the occupations involved in conservation. The students should be allowed to explore various occupations and be guided to realize that each individual is responsible for his environment.

BROAD OBJECTIVE: To help students become aware of the variety of land biomes found on the earth and to increase student knowledge of the immediate environment.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. What is a biome? Natural association of animal and plants in a given climate.	Play a game and match the picture of the land with a typical animal living there. Some will be more difficult than others.	Pictures of arctic, tundra, spruce-fir forest, temperate hardwood forest, tropical rain forest and desert surroundings available to be matched with a variety of wildlife pictures(National Wildlife Federation Animal Stamps).
	Discuss the relationship between plants and animals and climate and why certain animals live in certain regions.	Check BSCS Green Version High School Biology by Rand McNally - similar type of exercise.
2. What are some different biomes? Arctic Tundra(Canadian Arctic) Spruce-fir forest Temperate forest Tropical forest Desert Mountains	Read section in text entitled, "Life from North to South", p. 44-50. View filmstrip series, Land Biomes.	Text: Life, Brandwein, Burnett, Stollberg, p 42-57. Filmstrips: Eye Gate-The Desert The Tropical Rain Forest The Middle Latitude Deciduous Forest The Tundra The Mountains

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
	Make a frieze depicting the different biomes, including plants, terrain and animals.	Three large poster boards or paper on rolls
	Begin making student vocabulary lists.	
	Set up a reading table with several books and pamphlets.	Books: Berrill, Wonders of the Woods and Desert at Night. Dersal, Wildlife for America. Hastings, Animal Life in the Wilderness.
3. What is typical of the biome in which we live? A wide variety can be found in any small area.	Individual student reports on animals and plants characteristic to our area (temperate) and found in the city.	Book: Cohen, Animals of the City Encyclopedias
	Make a scrapbook of these reports with pictures and display on the reading table. One student can be chosen to design the cover.	
	Take a trip to Wildwood Park to observe the wildlife present.	

BROAD OBJECTIVE: To help students understand the necessity of environmental conservation.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. Why does man need to conserve resources? They cannot be replaced.	Read cases of disastrous misuse of the environment in text, p. 513-516. Discuss each separately.	Life, p. 513-516.
	Display posters of man-created pollution.	
	View filmstrip, "America's in Trouble," which explains which resources cannot be replaced. Have several interested students tape the narration and then reshow filmstrip.	Filmstrip: "America's in Trouble" National Wildlife Federation
	Collect newspaper clippings dealing with diseases related to pollution.	
	Listen to ecology songs.	Record: "The People are Scratching"
2. What are some local conservation problems? Litter(paper, cans, bottles) Vacant lots Air pollution Small sewage plant Burning of trash Water pollution Junk cars	Assign students certain areas in the city to observe photograph, and report to class about existing conditions. What is presently being done about these problems?	

CONTINUED

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
	Interview resource people if they cannot visit class. Examine the various conservation problems in our city.	Resource people: Sewage plant manager Sanitation Dept. official Water purification plant official Civic beautification commission president. Local Va. Air Control Board official.
	Discuss and plan a class project to help alleviate some local problems. Some possibilities are: Collection of trash on the streets. Beautification of school and/or school grounds. Students will be able to suggest others. A scrapbook of the project will be kept.	What about the economics of improving our environment? How will it effect the local tax rate? Two large green poster boards.
	Have students make clean-up, paint-up, fix-up poster depicting cleaning up Radford.	65 pieces of oak tag board magic markers. Colored pencils.
	Display these downtown and in our school.	

BROAD OBJECTIVE: To help students understand the different kinds of conservation and the variety of careers associated with each.

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CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. Why is water conservation important? Economic importance. Necessity for life. Chemical pollution control. Watershed protection. Power production. Recreation.	Divide the class into groups for research of water topics. Provide books, pamphlets, etc. for research. Research should include personal interviews of local people involved in each area. Again the economics of thesituation must be considered. Will people lose jobs if a polluting plant is forced to close down?	Encyclopedias. Pamphlets: "The State of Virginia's Environment." "Industry, Environment, Virginia" Governor's office-others,also. Books: Carona, Water Green, Water Meyer, Water at Work Stevens, The Town That Launders Its Water Bauer, Water Riches or Ruin
	Obtain water samples from 3 locations in New River and test for certain pollutants.	Water testing kit.
	Collect newspaper clippings and magazine articles about polluted water or water conservation programs.	
	Take a field trip to the water filtration plant to observe the processing there. Attention to the employees will also be involved.	Field trip.
	View filmstrip, Water Conservation.	Filmstrip: Water Conservation

CONTINUED:

	CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
2.	What are some occupations associated with water conservation? Filtration employees. Water patrol. Water safety instructor. Life guard. Pollution control chemist. Water Control Board employee. Dam construction engineer. Others students think of- Chemist Hydraulic engineer	Begin making a list of conservation careers and responsibilities of each on large poster boards to be displayed. Student research in SRA occupational briefs to find as many occupations as possible associated with water conservation.	4 poster boards. Large(12x18) white drawing paper. SRA occupational briefs. Booklets: "The State of Virginia's Environment." "Industry Environment Virginia"
3.	Why is soil conservation important? Economic importance Protection against soil erosion by wind, water, fire damage. Protection of non-replaceable resources.	View filmstrip, Soil Conservation. Review pamphlets on soil conservation and how it is prevented. Discuss recent floods and reasons for floods. Collect soil samples from a variety of areas in the city and test these for the various minerals necessary for plant growth. Students can bring home garden soil samples.	Filmstrip: Soil Conservation Pamphlets Sudburry Soil Test Kit.

CONTINUED

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
	Germinate seeds and plant them in different kinds of soil to find out which soil is best for plants. Then use soil test kit to check for minerals present.	
	Discuss why metals should be recycled.	
	Plan a class activity to help with the city can collection.	
	View filmstrip, Mineral Conservation Today.	Filmstrip: Mineral Conservation Today
4. What are some occupations associated with soil conservation? Soil analyst County agent Agricultural Extension employee. Farmer Scrap metal dealers	Add to list of conservation careers and responsibilities. Use SRA occupational briefs.	SRA occupational briefs
	Have a resource person talk to class about his own job (county agent, hopefully).	Resource person
5. Why is wildlife conservation important?	Individual student research on endangered species. Reports to class.	Library books: Van Dersal, Wildlife For America. Hess, The Curious Raccoons. Laycock, Wild Refuge. Smith, The First Book of Conservation.

CONTINUED

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
	Important to stress interrelationship between: animals - animals animals - plants water & mineral cycles food webs/chains	Hogner, Conservation in America. Green, Wildlife in Danger. May, The Big Island. Seton, Animal Tracks and Hunter Signs. Barker, Winter-Sleeping Wildlife. Hornblow, Animals do the Strangest Things. Selsam, Animals as Parents. Berrill, Wonders of Animal Nurseries. Barker, Wildlife in America's History.
	Display pictures of endangered species.	
	Class discussion of why we need wildlife and the reasons some species are in danger of becoming extinct.	
	Point out certain pamphlets on reading table having to do with wildlife.	
	Students make terrarium containing small animals and plants. Maintain in room.	Text: Life, p. 434-435. Magazines: National Wildlife Virginia Wildlife

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
	View bird study prints available. Try to learn to identify different species of birds.	
	Make animal puppets and have a puppet show to role play animal problems.	Material needed to make puppets.
6. What are some occupations associated with wildlife conservation? 1. Forest ranger 2. Zookeeper Game warden Biologist Naturalist Zoologist Ornithologist Biological aid Veterinarian	Add to existing list of careers and responsibilities.	
	Have a game warden come to class and explain his job.	Resource person
	Interview other persons involved in occupations associated with conservation of wildlife.	
	Role play game warden doing his job.	

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
7. Why is conservation of forests important?	Make a collage of products from the forest using magazine pictures or drawings.	Old magazines which children bring from home.
	Discuss ways forests are damaged.	Paper Manufacters
	View filmstrip, Conservation of Forests Today.	Filmstrip: Conservation of Forests Today.
	List recreation provided by forests.	
	Map the location of the national parks.	National Geographic
	View filmstrip, Yellowstone National Park.	Filmstrip: Yellowstone National Park.
8. What are some occupations associated with conservation of forests? Forester Firemen Tree markers Forestry aides Forest recreation supervisor. Naturalist	Add to existing list of careers and responsibilities.	Book: Hyde, What Does a Forest Ranger Do?
	Have a naturalist from Claytor Lake State Park visit the class and discuss his job.	
	Individual student research in SRA occupational briefs.	SRA occupational briefs.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
11. What are ultimate problems of conservation? People and population	One of the filmstrips will have already given the facts about population growth.	
Individual responsibilities:	Have a panel discussion on how to deal with the problems of a rapidly increasing population.	
1. Be informed 2. Be interested 3. Write letters 4. Ask questions 5. Teach others	Maintain a conservation newsletter for the school to be published and delivered to each classroom.	

CULMINATING ACTIVITY:

CULMINATING ACTIVITY	RESOURCES AND MATERIAL
Play the game, "What's My Line," using the responsibilities associated with any career related to the environment as the clue. The class must guess the occupation.	
Hand out a word search puzzle to include the words in the vocabulary list.	
Make jewelry from scraps and discarded articles that would ordinarily be thrown away.	
Several interested students will make a nature trail at a local park. Signs will be made to mark the trail.	
Design a brochure advertising some site in the community of interest-possibly the school. Illustrate the brochure.	
Make posters for display in school to depict good conservation practices at school(tag board).	

SUBJECT MATTER TIE-IN

Language Arts

Oral reports
Written reports on reactions to resource persons or field trips.
Writing letters for information.

Math

Work problems dealing with mileage charts to and from park sites in Virginia, or national park sites.

Social Studies

Importance of forests and soil for products.
National Park Service.
Governmental agencies which protect the environment.
Legislation protecting the environment.
Problems resulting from too many people, crowding, etc.

Music

Ecology songs.
Students might write their own songs.

Art

Make a mural depicting scenes from a national or state park.

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3. Filmstrips:

Sinclair, Robert, Ph.D., Conservation for Today's America, Chicago: Society for Visual Education, 7 filmstrips, 4 records.

Klink, Karin E. 2-7: Land Biomes of the World, New York: Eye Gate House, 8 filmstrips, 4 cassettes.

America's in Trouble, National Wildlife Federation.

4. Booklets:

Governor's Council on the Environment, Richmond, Virginia.
The State of Virginia's Environment
Industry Environment Virginia

CAREER EDUCATION PROGRAM
RADFORD CITY SCHOOLS

UNIT TITLE: "ITS NOT WHAT YOU SAY,
ITS HOW YOU SAY IT"

APPROXIMATE GRADE LEVEL: GRADE 6 OR 7

PROJECT SITE: RADFORD CITY SCHOOLS

PROJECT DIRECTOR: DR. JAMES E. RUTROUGH, SUPERINTENDENT

PROJECT COORDINATOR: RANDY WRIGHT

THE CAREER EDUCATION PROGRAM
THE RADFORD CITY SCHOOLS
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BROAD OBJECTIVES:

1. To acquaint the student with the careers involved in good speaking.
2. To develop skills in oral presentation.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. What do we need to be a good speaker?	Discuss and list on board what makes a good speaker.	
2. Do I know any good speakers?	Scan table of content to find lessons that would help to develop speaking abilities.	Colin, David. Our Language Today, American Book Co., New York, N.Y. 1966. Hand, John S. Progress In English. Laidlow Bros., River Forest, Ill., 1972. Growth In English. Laidlow Bros., River Forest Illinois, 1972. Pollock, Words and Ideas. MacMillan Co., New York, N. Y., 1960.
3. In what careers do we need to be a good speaker?	Discuss poster that are displayed. Introduce people who will be coming as speakers. Organize questions students will want to ask resource persons.	Keefe, Barbara. Careers for Good Speakers. J. Weston Walch. Words and Ideas, p. 150.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
4. What do persons in various careers do that requires good speaking?	Three or four of these will be asked to speak. Field trip to radio station to observe an announcer at work.	Possible resource areas for speakers: Lawyer Doctor Politician Interpreter Clergyman Sales Career Announcer Actor Personnel Clerk Receptionist
5. What career is of interest to me?	Choose a career for oral presentation and role play working situation. Schedule interview with chosen career person if possible.	
6. How do I schedule an interview? What questions should I ask?	Study and discussion of textbook pages.	Our Language Today, Grade 5, p. 256-257.
7. How do I present my career orally?	Give a 3 to 5 minute presentation on career choice. The class will score each person on a checklist for:	

Points - 3-Good 2-Fair 1-Poor

Name	Posture	Pronunciation	Pitch and Stress	Poise	Total

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CAREER EDUCATION PROGRAM
RADFORD CITY SCHOOLS

UNIT TITLE: MEASUREMENT AND THE METRIC SYSTEM

APPROXIMATE GRADE LEVEL: GRADE 6 OR 7

PROJECT SITE: RADFORD CITY SCHOOLS

PROJECT DIRECTOR: DR. JAMES E. RUTROUGH, SUPERINTENDENT

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OBJECTIVES:

1. To help students recognize that his interest, aptitudes and achievements will influence his future.
2. To help students understand that preparation and proficiency are required for most jobs.
3. To help students recognize that behavior and skills used in school also are used on the job.
4. To help students understand personal interest and characteristics influence career decisions.
5. To help students develop some of the skills needed on the job.
6. To help students become aware of skills, attitudes and habits associated with employability.
7. To help students recognize that accepting a task he also accepts certain responsibilities.

INTRODUCTION TO: MEASUREMENT AND THE METRIC SYSTEM

This unit on measurement and the Metric System is planned for a sixth grade class, but with alterations it could be used on other grade levels. The unit begins with a study of the different types and units of measurement, to acquaint the students with the history of the units. The study then goes into precision and how precise one can be in measurement of linear, dry measure, liquid measure, time, and metric measure. Emphasis on the careers that use measurement and the percision each career requires.

MOTIVATING ACTIVITIES

Learning Center on Measurements and
Careers Using Measurement.
"What Job uses what measurement?"
List of careers.
List of measurements.
Match careers with measurements used
by the career.

BROAD OBJECTIVE: To help the students become aware of the different types and units of measurement.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. What is the different measurements you use or could use?	List lengths, heights, weights, distances, and time. Examples: 1. Pupils height 2. Pupils weight 3. Classroom length 4. Distance between two towns 5. Cup of sugar 6. Gallon of milk 7. Day, hours	
2. What is the appropriate unit of measure for each measurement?	Use list and decide what unit would be used for each.	
3. Why do we use certain units of measure?	View filmstrips.	Filmstrips: *History of the English System* *History of the Metric System*
	Discussion on why we use different units for different measure.	
	View films.	Films: *Measuring Units - An Interduction.* *Measurement.*
	View filmstrip.	Filmstrip: *Measurement.*

CONTINUED

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
	Reports on how we arrived at the: 1. inch 2. foot 3. yard 4. rod 5. mile 6. second 7. minute 8. hour 9. day 10. week 11. month 12. year 13. decade 14. century 15. ounce 16. pound 17. ton 18. cup 19. pint 20. quart 21. gallon 22. peck 23. bushel 24. meter 25. gram 26. liter 27. are	Charts on measurement Encyclopedias Book from library Filmstrips Films

BROAD OBJECTIVE: To stress precision in measurement (linear, liquid measure, dry measure, time, and metric measure) and help the student become aware of careers associated with each.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. Why is it important to be precise in linear measurement?	Have students measure the length and width of their Math book.	Rulers.
	List the different measurements on the black board.	
2. Do we need a unit of measure?	Discussion on why the measures were not the same.	
3. What is the range of measurement?	Work problems on Measure and Measurement.	Textbook: Mathematics 6
4. Can we obtain an exact measurement in linear measure?	Precision. Numbers and Measures pp. 255-259	
	View films.	Films: Comparing - Getting Ready To Measure. Let Us Measure Inches, Feet and Yards.
	View filmstrip.	Filmstrip: English System of Measurement

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
5. In what careers do you have to be precise? 1. Architect 2. Machinist 3. Draftsman 4. Carpenter 5. Surveyor 6. Pattern Maker 7. Cabinet Maker 8. Photographer	Start list of careers that use measurement. Information to be compiled on each career and made into a booklet. 1. Name of career. 2. List how they use measurement. 3. Tell how precise they have to be. 4. Working conditions. 5. Education. 6. Salary. 7. Pictures of person in his career.	Resource people. Films. Filmstrips. Encyclopedias. SRA Occupational Briefs. Parents Magazines. Newspapers.
6. How precise do these people have to be in their careers?	Discussion on how precise the students think each person has to be on their job.	
	Resource person from Lynchburg Foundry to talk about the job of Pattern Maker.	Resource person.
	Resource person - Drafting teacher from high school.	Resource person.
	Surveyor to talk about his job.	Resource person.
	Resource person from Inland Motors to talk abour precision in building motors.	Resource person.

CONTINUED

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
	Field trip to New River Community College to visit Drafting Dept. and Machine Shop.	Field trip: New River Community College.
	View films.	Films: Your Career in Architecture. Mechanical Drawing - Language of Drawing.
	View filmstrips.	Filmstrips: My Dad is a Carpenter. My Dad - The Photographer.
7. Can you measure and be precise?	Have students measure one room in their home to the nearest 1/2 inch. In class have them do a scale drawing of the room. 1/4 inch = 1 foot	Ruler Paper Pencil
	Have students draw a house plan to scale.	
	View filmstrip.	Filmstrip: Working With Scale.
8. How do we measure water, sand and leaves or grass?	Discussion on different units of measure for: Dry Measure: 1. pints 2. quarts 3. pecks 4. bushel Liquid Measure: 1. ounces 2. cups 3. pints 4. quarts 5. gallons	

CONTINUED

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
	Weight 1. ounces 2. pounds 3. tons	
	Let the students bring containers to measure the water, sand, and leaves or grass.	Milk container, measuring cups, sand, water scales, leaves or grass.
	View films.	Films: Let Us Measure - Ounces, Pounds, and Tons. Let Us Measure - Pints, Quarts, and Gallons. Story of Weights and Measure.
	View filmstrip.	Filmstrip: Liquid Measure.
9. What are the different careers that have to be precise in weights, dry measure and liquie measure? 1. Chemist 2. Farmer 3. Check-out Clerk 4. Cook 5. Pharmacist 6. Painter 7. Home maker 8. Photographer	Add to list of careers compiling information to go into booklet.	
	Resource person who is a pharmacist to talk about his job and what he measures.	Resource person.
	Resource person - homemaker to talk about how they use measurement in the home.	
	View filmstrip.	Filmstrip: My Mother Works at Home.

CONTINUED

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
10. What would happen if you measured wrong in: 1. a receipt 2. a chemical mixture 3. mixing paint 4. selling fruit 5. mixing medicine	Have students interview: 1. a cook or mother 2. a chemist 3. painter 4. check-out clerk or farmer 5. pharmacist to find their answers.	
11. What are some of the uses for which we use time measurements?	Students make list of uses. Examples: 1. age 2. time to get up 3. time to go to school 4. payment of wages 5. 300 yd. race 6. bus schedule 7. time zone changes 8. building schedule 9. plane time table	
12. What unit of time is associated with each measurement? 1. second 2. minute 3.hhour 4. day 5. week 6. month 7. year 8. decade 9. century	Using list decide which unit to use.	
	Discussion on why we would use a certain unit of measure.	
	Study units of time on page 254.	Text book.
	View filmstrip.	Filmstrips: Time in Minutes Time

CONTINUED

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
13. What careers would use time measurement? 1. airplane pilot 2. navigator 3. cook 4. prof. athlete 5. photographer 6. x-ray technician 7. race car drivers	Add to list of careers to be made into a booklet. Resource people Students write and present skits on what would happen in each career if they didn't use time measurement.	Same resources. X-Ray Technician Photographer
14. Do you use time measurement?	Students list the different time measurements they see in a day.	
15. Is your time measurement precise?	Discussion on their list as to precision and being exact.	
16. Can we obtain an exact measurement in time measure?		
17. Can the Metric System be used to measure precisely?	Have students measure their book in centimeters.	Rulers.
18. What could be measured in: 1. mega 2. kilo 3. deca 4. hecto 5. units 6. deci 7. centi 8. milli 9. micro	List of objects, distances, areas, etc. that could be measured in each unit. Comparing the units with the English System. View filmstrips.	Filmstrips: The Metric System Characteristics of the Metric System.

CONTINUED

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
19. Do we use the Metric System?		
20. What are some of the things measured in the Metric units? 1. meters 2. grams 3. liters 4. are	Students being in pictures of products measured in metric units.	Magazines Newspapers Catalogs.
	Make a bulletin board using these pictures.	
	Problems using Metric units of length - pp. 250-251	Textbook.
21. What careers use the Metric units in measuring? 1. Chemist 2. Machinist 3. Photographer 4. Mechanic (imported cars) 5. Watchmaker 6. Pharmacist 7. Atom Physicist 8. Engineer	List of careers to be added to booklet.	Same resources.
	Resource person - Chemist.	Resource person.
	View filmstrip.	Why Go Metric.
22. Should we change over to the Metric System?	Debate on pros and cons of changing to the Metric System.	Filmstrip Books Encyclopedias

CULMINATING ACTIVITY:

Puzzle on measurement.

Students interview parents to find out type of work they do and how they use measurement in their work.

Students role play different careers showing how they use measurement.

Booklets finished and displayed on Bulletin Board.

CAREER EDUCATION PROGRAM

RADFORD CITY SCHOOLS

UNIT TITLE: THE WONDERFUL WORLD OF GEOMETRY

APPROXIMATE GRADE LEVEL: GRADE 6 OR 7

PROJECT SITE: RADFORD CITY SCHOOLS

PROJECT DIRECTOR: DR. JAMES E. RUTROUGH, SUPERINTENDENT

PROJECT COORDINATOR: RANDY WRIGHT

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INTRODUCTION TO: THE WONDERFUL WORLD OF GEOMETRY

This unit was written for use in a seventh grade but could be deleted and used in part in a sixth grade. It is designed to create an interest in the beauty of geometric constructions and to give the student a better understanding of the occupations related to geometry.

MOTIVATING ACTIVITIES	RESOURCES AND MATERIALS
Arrange interest - arousing bulletin board displaying pictures which will illustrate some of the occupations relating to the study of geometry. With each picture, place a drawing of a geometric figure and on the drawing write the identification of the occupation. Leave space for students to add other occupations.	Bulletin board space. Pictures cut from magazines. Drawings of various plane geometric shapes.

BROAD OBJECTIVE: To help students develop an appreciation of geometric construction in the world of art.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. What does a person have in mind when he says, "That is a pretty home" or "I don't like the way this home is built"?	Have students mention and list the characteristics that might go into the making of a pretty home. Collect and display pictures of the exteriors of homes which are noticeably different.	Newspaper clippings (Roanoke Times, 6/14/73) Magazine pictures.
2. What are some of the shapes that you have observed from the pictures or that you recall from previous observations?	Have students illustrate these shapes. Have students identify the shapes by names. Have students illustrate an entrance to a home that is real or that might be a part of a dream home.	Compass, ruler, and protractor. Math Text Book Chapter 8. Geometric Charts (Plane) Geometric Solids Coordinate Paper
3. Do you know of any buildings (homes, business places, or any other type of building) that are especially interesting to you?	Have each student make a mental survey of his own neighborhood as well as other sections of Radford and surrounding area. Have lists compiled and placed on chalkboard.	Teacher of Virginia History to indicate places of historical interest. Chamber of Commerce to make suggestions regarding special geometric designs that appear in our city.

CONTINUED

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
	Plan and take field trip to observe places of interest in Radford. Observe architecture.	
	*Design and build home or special areas of a home. Use geometric designs.	Scrap lumber, popsicle sticks, Paint, Glue
	*Build replica of some well known building (Mt. Vernon, etc.)	
	*Group Work	
	Write reports on famous homes and other buildings.	English teacher.
	Write letter to the Association for the Preservation of Virginia Antiquities to ask for information about places in the Montgomery County which might illustrate special geometric designs.	Association for the Preservation of Virginia Antiquities English teacher.
	Plan and take field trip to observe designs of geometric nature in surrounding area.	Person to act as guide.
4. Do you know of any other types of constructions that might involve geometry?	Observe and discuss pictures in books and magazines.	Magazines and books.
	Show movie.	Movie.
	Show filmstrips.	Filmstrips.

CONTINUED

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
(Possible answers to No. 4): bridges, water tanks, TV towers, control tower at airport, forest ranger's observation tower.		
5. Why do you notice so many triangles in the construction of a bridge?	Visit and observe structure of bridges.	Popsicle sticks, glue, etc. for bridge construction. Field trip to observe general construction of bridges.
	Explore the use of the triangle in construction. Discuss rigidity and structural strength obtained through use of triangle.	
6. What are some of the interesting bridges that you have observed in your travels?	Compile list of famous well known, or special kinds of bridges.	Information from Virginia History Class.
7. Have you read about or seen pictures of others that interest you?	Check possibilities of such bridges in local area.	Teacher of Virginia History. Students who have observed such bridges in their travels.
8. What phase of geometry would be evident in the construction or use of a drawbridge?	Study and discuss various types of bridges including Bascule type.	Encyclopedia Britannica Volume 4, pages 192-203

CONTINUED

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
	Construct a bridge (possibly Bascule type).	Use the idea of weights in windows to cause them to remain open. Science teacher.
9. In buying a frame for a picture, we usually think of what shape?	Discuss Madonna of the Chair by Raphael.	Famous paintings.
10. Can you remember a famour painting that has another outline shape? (circle)	Have one or two students do some research on Raphael and write reports.	Teacher of Art from Radford College.
11. How does an artist use geometry in his paintings?	Discuss the reason for the shape used in this painting.	Field trip to Art Department at Radford College or New River Valley Community College.

BROAD OBJECTIVE: To acquaint students with the use of geometry in the construction of factory produced and family produced items used in our day-to-day living.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. What factory-made items have you used today? Can you associate geometric shapes with any of them?	Make a list of items mentioned and geometric shapes associated with each.	
2. If we organized the list beginning with the time you awoke, maybe we could remember more.	Display charts showing plane geometry figures as well as solid shapes to be used to associate with thinking.	Plane geometry charts. Solid geometric solids. Text book, chapters 8, 9, 10.
3. What are some of the parts of our homes or the more permanent installations in our homes that relate to geometry?	Make a list of everything mentioned. Use overhead projector and reserve for future reference.	Overhead projector. Bulletin board with pictures related to content question # 3.
4. What was the first thing that needed to be done when your house was built?	Check names of geometric figures involved in excavated space.	Text book.
5. How many dimensions do you use to measure your basement (foundation)?	Check textbook to find names for dimensions.	Textbook.

CONTINUED

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
6. What might you do with the dirt that is excavated? How would you measure it?	Work problems in volume from textbook.	Textbook - Jr. High School Mathematics 7
7. If you were using brick for your home, would you use volume or square measure in purchasing the bricks needed?	Determine the reason for using square measure.	Bricks for illustration. Brick mason.
8. What else about your home might require the use of volume?	Study formula for volume of a rectangular solid. Apply this to the refrigerator at home or in the cafeteria. Do the same for a freezer.	Refrigerator at home or school. Freezer at home or school. Formula for volume of rectangular prism: $V=LWH$
9. What kind of hot water tank do you have in your home? How many gallons does it hold? Is it rectangular or cylindrical?		Formula for volume of cylindrical tank: $V=\pi R^2H$
10. How many gallons will one cubic foot hold?		Use visual aides, such as cubic foot, cubic yard and cubic inch.
11. You will have walkways somewhere about your home. Of what materials are they made?	Have students mention kinds of walkways. (concrete, brick, etc.)	

CONTINUED

	CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
12.	Most of you have mentioned concrete. Of what materials are concrete walks really made? Where do we get the concrete?	Mix small amount of concrete. Pour into previously built form at direction of resource person.	Science teacher. Small portions of sand, gravel, cement, and water. Person who builds concrete walks, walls, etc.
13.	How do we measure the quantity of concrete needed for a walkway?	Discuss lingth, width and thickness as variables in the building of a walk. Solve problems from text book.	Formula for volume: V=LWH Text book, pages 276-280 Use a section of walk on schoolground for measuring and thus determining volume and possible cost.
14.	Do you have flower gardens of geometric shapes? If not, could you?	List possible shapes and find area of each.	
15.	How could you determine the quantity of grass seed for your lawn?	Decide what type of measure would be needed.	Work problems in finding area of lawns as designed by students.
16.	Have you looked at the roof of your house? Is it flat? Why?	Draw quickly-done illustrations of the appearance of your roof.	Student's personal supplies for drawing. Rulers.

CONTINUED

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
17. Why do they all slope? How much do they slope? Are they the same?	Show how the right triangle enters into the discussion of slope.	
	Explain the Theorem of Pythagoras.	Burn's Board illustrating Pythagorean Theorem.
	Illustrate the geometric proof of the theorem.	Flannel Board
	Use string on flannel board.	Ball of twine.
	Write brief report on Pythagoras.	Encyclopedia.
18. Do you know about other people who have contributed to our knowledge of Geometry?	Have small group of students work in Library to try to find people related to #18. (Euclid, Plato, etc.)	Library resource material. Librarian who will guide them in finding material.
19. We spend several hours a day in our own classroom. Have you ever thought about how much air is in this room and how much each person in the room needs?	Have students decide on the shape of the room.	Text book for a study of various shapes.
	Have them suggest the unit of measure that might be used to measure the air.	Geometric solids. Insturments for measuring the room.
	Have students measure the room and find the volume.	Cardboard cubic inch, cubic foot and cubic yard. Science teacher to discuss importance of sufficient amount of air (15 cu. ft. per person)

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
20. Since we have measured the air in the room, perhaps we should find out about proper lighting.		
21. how do we adjust the light in our room?		
22. What do we find is necessary to do when someone is writing on the chalkboard?	Close venetian blinds and turn lights off; close blinds and turn lights on; open blinds and turn lights off; open blinds and turn lights on. Determine the difference in the four situations.	Doctor to explain importance of proper lighting to vision. Electrician to evaluate lighting in the room and explain why it is arranged in present manner.
23. How can we determine the amount of light needed in our room?	Study foot candle as a unit of measure. (1 foot candle is the amount of light a standard candle will give at a distance of one foot.)	Colliers Encyclopedia, Volume 8, Page 717.
24. Does the type of work affect the amount of light needed?	50 foot candles needed for desk work.	Victor, Science for the Elementary School. Page 701.
25. What unit is used for measuring the amount of light required?	200-300 foot candles needed for extra fine industrial bench or machine work. The sun on a clear day will give as much light as 10,000 ft. candles.	

CONTINUED

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
26. What furnishes the natural light in a room? Do we need artificial light at all times? Why are some of the panes of glass in our room painted green?	Evaluate the window space. Find area of windows in both exterior and interior positions. Estimate those which can not be conveniently measured. Try to determine the number of foot candles of light.	Room windows. Venetian Blinds.
27. How do venetian blinds govern the amount of light entering the room?	Study the angles formed when blinds are lowered. (straight, acute and obtuse.) Observe that blinds are slightly concave (convex),	Charts Structure of venetian blinds.
28. When could we see actual preparation for some of the occupations that we have mentioned in our unit?	Visit Vocational Building at Radford High School.	Vocational Education Building at Radford High School. Supervisor and teachers in various vocational fields. Mr. Hopkins, Vocational Supervisor Mr. Robbins, Electricity Mr. Holme, Machine Shop Mr. Sayers, Drafting Mr. Hines, Carpentry Mr. Roane, Industrial Arts

CULMINATING ACTIVITIES

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
What can we do to keep some of the information that we have collected about vocations?	Compile information and place in booklet form. Have booklet pages reproduced so that each person may have a booklet. Use geometric art on cover of booklet. Organize a "What's My Line?" program. Organize a "Classroom Quiz" program.	Paper for reproducing pages of booklet. Art materials.

The following items indicate a possibility for use in connection with this unit. Because it was not possible to preview them, they are not indicated in specific locations in the unit.

Filmstrips:

How We Build Bridges
The Neighborhood Optometrist
A Trip to an Airport
Father's Work - My Dad is a Carpenter
Assembling A Car
Building Houses
Workers Who Fix Things

Charts: (career cluster)

Mathematics C-107

Motion Pictures:

Geometry - Lines and Shapes
Geometry and You
Geometry In Action
Practical Geometry - Lines and Angles
Parallel Lines
Volumes of Cubes, Prisms, and Cylinders
What Is Area
Angles and their Measurement
Discovering Solids Part I
Discovering Solids Part II
Dynamics of the Circle

CAREER EDUCATION PROGRAM

RADFORD CITY SCHOOLS

UNIT TITLE: MAKE ART YOUR "THING"!

APPROXIMATE GRADE LEVEL: GRADE 6 OR 7

PROJECT SITE: RADFORD CITY SCHOOLS

PROJECT DIRECTOR: DR. JAMES E. RUTROUGH, SUPERINTENDENT

PROJECT COORDINATOR: RANDY WRIGHT

THE CAREER EDUCATION PROGRAM
THE RADFORD CITY SCHOOLS
1612 WADSWORTH STREET
RADFORD, VIRGINIA 24141
PHONE: 1-703-639-6673

BROAD OBJECTIVES:

1. To acquaint the students with careers of art.
2. To incorporate basic skills in research of art career.
3. To develop appreciation for the artistic person.

INTRODUCTION TO: MAKE ART YOUR "THING"!

This unit on Art Careers us planned for upper elementary. The unit is developed to be used as a management system over a period of several weeks in weekly art classes. It could also be used in a concentrated study.

It is designed to expose the student to many areas of art careers.

Teacher will introduce unit by displaying posters on art careers. A bulletin board with careers in art will be made and used as a management system to show student progress in a specific art aareer. Teacher will discuss various occupations and have student choose their preference. After introduction, students will proceed with their research on their own, recording process on bulletin board. Teacher will act as resource person in research and provide all available resources on art careers.

*Example of Management System:

ART TEACHER

A. Job Qualification ____

B. Job Availability ____

C. Salaries ____

D. Working Conditions ____

E. Example of Work ____
   1. Role play job experience
   2. Photograph of on job experience
   3. Art object

F. Create personal example ____

Each student will compile information in a booklet to present to class as a culminating activity.

*OTHER CAREERS:

Architect
Mechanical Draftmen
Mechanical Engineer
Cabinet Maker
Interior Decorator
Sign Painter
Jewler
Art Teacher
Photographer
Displayman
Cosmetologist
Photo-engraver
Lithographer
Cartographer
Painter
Sculptor
Cake Decorator
Stage Designer
Fashion Illustrator
Greeting Card Illustrator
Museum Curator
Advertising Artist
Package Designer
Book Illustrator
Free Lance Artist
Art Gallery Manager
Glass Blower

Filmstrips:

CF-A239	Building Houses, Educational Reading Service
CF-A170	Crafting A Chair, Eye Gate.
CF-A175	How We Build Bridges, Eye Gate.
CF-A173	How We Build Cities, Eye Gate.
CF-A171	How We Build Houses, Eye Gate.
CF-A174	How We Build Roads, Eye Gate.
CF-A176	How We Build Ships, Eye Gate.
CF-A172	How We Build Skyscrapers, Eye Gate.
CF-A169	Making Clothing, Eye Gate.
CF-A119	My Dad Is A Carpenter, IFC.
CF-A132	My Dad The Photographer, Jam Handy.
CF-A123	My Dad Works In A Supermarket, IFC.
CF-A147	The Neighborhood Barber, Eye Gate.
CF-A148	The Neighborhood Beautician, Eye Gate.
CF-A142	The Shoemaker, Eye Gate.
CF-A156	Stocker In A Supermarket, Eye Gate.
CF-A143	The Tailor, Eye Gate.
CF-A159	The Variety Store, Eye Gate.
CF-A145	The Watchmaker and Jeweler, Eye Gate.

Transparencies:

CTR-2 Learning About Clothing, Creative Visuals

Possible Resource People:

Any parent involved in art career.
Art teacher from college.
Leggett's Department Store Display Artist.
Architect
Beautician
Professional photographer - display of.
Cabinet maker
Jeweler
Glass blower
Cake decorator

Possible Field Trips:

Radford College Art Department.
Visit a jewelry store.
Visit drafting lab. at Community College.
Visit a house being constructed in final stages.
Visit department store to observe displays.

Filmstrips:

Careers in Drafting	Educational Dimension
Careers in Photography	Educational Dimension
Art Careers in Advertising	Educational Act. Inc.
Careers in Fashion Design	
Careers in Illustration	

CAREER EDUCATION PROGRAM

RADFORD CITY SCHOOLS

UNIT TITLE: CAREERS THROUGH MUSIC

APPROXIMATE GRADE LEVEL: GRADE 6 OR 7

PROJECT SITE: RADFORD CITY SCHOOLS

PROJECT DIRECTOR: DR. JAMES E. RUTROUGH, SUPERINTENDENT

PROJECT COORDINATOR: RANDY WRIGHT

THE CAREER EDUCATION PROGRAM
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INTRODUCTION TO: Careers Through Music

This unit is designed for use with sixth and seventh grades. Through this unit students can gain a general knowledge of music and careers related to music. It is hoped that the students will also understand and appreciate music as a means of entertainment and relaxation.

BROAD OBJECTIVE: To help students gain a general knowledge of music as it relates to the social level of the community.

To help students understand the satisfaction gained not only in a musical career but in any career.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. What is music?	Students define and discuss music as they understand it in their lives. Class listen to records portraying different categories. Teacher present categories of music: 1. Serious- opera, concert, chamber 2. Religious- Oratorio, spiritual, hymns, gospel. 3. Folk 4. Country 5. Jazz 6. Folk rock Students as performers may represent categories with their talents.	School records and students' records. Resource people from each category may appear before class. Instrumental Vocal
2. What is the history of music in the main cultures of the world through the years?	Students listen to record. Students read, report, and discuss musical history 1. Early music 2. Famous composers of: a. classics b. contemporary music	"Two Thousand Years of Music" (Barclay)

CONTINUED

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
	Show slides on composers of the classics.	Slides: Three B's, etc.
	Introduce and listen to records.	Narration of Bach's life and music(Record-Barclay) Recorded classics of famous composers(familiar to young and old).
3. How does music affect our everyday lives?	Students discuss entertainment in world of music 1. musicians 2. dancers 3. singers 4. performers (music supplying a background)	
	Discuss aspects of people who entertain us.	Resource talent in community may appear.
	On chalkboard list your favorite: 1. actors-actresses 2. dancers(dances) 3. singers 4. instruments 5. instrumentalists	

CONTINUED

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
	Students may be musical entertainers.	
	Students prepare for and take field trip.	Field trips: College(Special events) Radford High School (Band room, Chorus)
4. How is the entertainment world of today affected and influenced by music of the past?	Presentation of general theory and terms in music.	
	Students discuss relationship between past and present. 1. Music theory 2. Musical terms 3. Musical instruments	Special music teacher. Regular teacher.
	Math tie-in music theory: Fractions, percentage, decimals may be taught during reading of music, study of tempo, and rhythm.	
	Science tie-in: Musical sound-vibrations Human ear	
	Review: This was used in conversation unit.	

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
	Make simple musical instruments.	
	Show pictures of musical instruments.	Pictures of musical instruments in symphony and band.(Barclay)
	Make instruments for rhythm band.	Pictures of early instruments and their present-day counterparts or models.
	Show pictures of instruments.	Materials needed for instruments:

CONTINUED

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
	Show a gramophone, forerunner of victrola phonograph and stereo.	
	Show how first rock group (Beatles) copied Phrygian mode used by the early musicians in Asia Minor.	
	Play record for students.	Record: "Two Thousand Years of Music"(Barclay)
	Show how Johann Sebastian Bach was "Father of Modern Music"	Record: "Father of Modern Music"(Barclay)
5. How does a general knowledge and appreciation of music lead to job roles?	Students discuss and list careers related to interest and ability in music. 1. Teacher 2. Composer 3. Director-orchestra leader. 4. Critic or musicologist 5. Arranger or orchestrator 6. Supervisor of music 7. Radio-TV announcer 8. Entertainer 9. Musician-instrumental 10. Clergyman-director of religious education. 11. Librarian 12. Dancer	Career persons visit class: 1. Choral director 2. Band director 3. Vocalist 4. Music supervisor 5. Instrumentalist(versatile)

CONTINUED

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
	13. Popular singer 14. Impersonator-Comedian 15. Choral director 16. Therapist-recreational and occupational 17. Piano technician and tuner.	
	Students role play the following: 1. Director 2. Entertainer-Impersonator-Comedian 3. Dancer 4. Et Cetera 5. Drummer 6. Pianists 7. Band students 8. Vocalists	Student participants Materials needed for the role playing activities.

CULMINATING ACTIVITY:

CULMINATING ACTIVITY	RESOURCES AND MATERIAL
Have students present a musical program composed of: 1. Dancers 2. Vocalists 3. Instrumentalists 4. Impersonators 5. Group singers 6. Skits(operetta type) Students become lyricists for units of study and occasions during year. This will be a continuing activity.	Materials needed for musical program:

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Mirsky, Reba P. Johann Sebastian Bach, Follett Publishing Company, 1965.

CAREER EDUCATION PROGRAM
RADFORD CITY SCHOOLS

UNIT TITLE: MAGNETISM AND ELECTRICITY

APPROXIMATE GRADE LEVEL: GRADE 6 OR 7

PROJECT SITE: RADFORD CITY SCHOOLS

PROJECT DIRECTOR: DR. JAMES E. RUTROUGH, SUPERINTENDENT

PROJECT COORDINATOR: RANDY WRIGHT

THE CAREER EDUCATION PROGRAM
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INTRODUCTION TO: MAGNETISM AND ELECTRICITY

For over 2000 years, man has known of the mysterious force called magnetism. Magnetism and electricity plays an important role in our everyday life. Navigators use the magnetic compass to find direction . The operation of many useful devices such as the electromagnet, the electric bell, the telephone and telegraph, the electric motor, and radio depend upon the effects of magnetism and electricity.

MOTIVATING ACTIVITIES	RESOURCES AND MATERIAL
List the ways that magnetism and electromagnetism are used in everyday lives.	Students knowledge of magnetism and electricity.
Wire a simple elctric circuit.	Battery-wire and bulb.
Make bulletin boards on magnetism and electricity.	Construction paper.
Make a learning center on magnetism and electricity.	Film: Magnetism and Electricity
Make a display of the different kinds of magnets and label whether they are natural or artificial.	

BROAD OBJECTIVE: To help students better understand the operation of many devices, as well as the magnetism of the earth itself.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. What is a magnet? What is a magnetic substance?	Discuss the origin of the work and find through research the different magnetic substances. Discuss in groups or individual students.	Dictionary - library research (World Book Encyclopedia) Filmstrip - Film: "Magnets"
2. What are the kinds of magnets?		
3. What is the Law of Magnets?	Read and discuss with groups or individual students.	
4. What is a Magnetic Field?	Set up investigation to show a Magnetic Field.	Cardboard or glass, iron filings, bar magnets. Film: Magnet Force
5. How can you make a magnet by contact?	Read and investigate.	Materials for contact: Steel knitting needle, bar magnet. Books.
6. how can you make a magnet by induction?		Materials for investigation on induction: Nail, bar magnet, and iron filings.
7. What is the difference between a temporary magnet and a permanent magnet?	Read and demonstrate.	Library.

CONTINUED

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
8. How can we explain magnetism?	Reasearch - Various investigations set up by the students.	Books. Film: Magnetism
9. How can we demagnetize a magnet?	Read and discuss. Investigate and demonstrate.	Books. Materials: Hammer, source of heat.

BROAD OBJECTIVE: To help students realize how temporary magnets are produced by an electric current.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. How can electricity create magnetism?	Investigation.	Materials: battery, bell wire, switch and iron filings.
2. How can you increase the strength of an electromagnet?	Read and investigate.	Film: Electromagnets - How They Work. Books - Filmstrips. Materials: wire, battery, switch, iron filing.

BROAD OBJECTIVE: To increase the students understanding about the uses of magnets and the earth as a magnet.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. What are some of the uses of magnets? a. Electric Bell b. Telegraph c. Electric Motor d. Telephone	Do research to find out the operation of each device. Make a working model of the one of your choice.	World Book Encyclopedia. Materials selected by students for models.
2. Why is the earth considered a magnet?	Research.	Books.

BROAD OBJECTIVE: To cause students to be aware of and understand static and current electricity.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. What is static electricity?	Show film.	*Electricity and How It Is Made.*
2. What is current electricity?	Do library research. Show Filmstrip.	Books. *Introduction to Electricity* C-70
3. What makes an electric current flow?	Read and discuss.	
4. What are the electrical units? a. Volts b. Ampere c. Ohms	Do research on each electrical unit and be able to give examples of each. Discuss with group or individual students.	
5. How is electric current measured?	Research and demonstrate.	
6. What is an electric circuit?	Read and demonstrate.	Books. Film: *Electric Current.* Materials: Switch, battery wire, socket and bulb.

BROAD OBJECTIVE: To help students understand the dry cell and storage cell.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. What is the difference between a dry cell and storage cell?	Read and discuss.	Books (Encyclopedias)
2. What is the difference between series and parallel circuits?	Read and demonstrate.	Books. Materials: batteries, bulbs, sockets, wire.
3. What are the electric symbols?	Draw.	Poster board.
4. What are some of the uses of electricity? a. Generator b. Transformer	Read and discuss the principle of each.	Book.

BROAD OBJECTIVE: To have students from studying this unit realize the opportunities found in the work of the science of magnetism and electricity.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. Are there jobs available in the field of magnetism and electricity?	Invite a resource person to talk with the students.	Resource person.
	Make a bulletin board of the careers found in this field.	Materials.
	Library research.	
CULMINATING ACTIVITY	Trip to telephone company or Foundry. Role playing using the project they made in the unit.	

CAREER EDUCATION PROGRAM

RADFORD CITY SCHOOLS

UNIT TITLE: WEATHER

APPROXIMATE GRADE LEVEL: GRADE 6 OR 7

PROJECT SITE: RADFORD CITY SCHOOLS

PROJECT DIRECTOR: DR. JAMES E. RUTROUGH, SUPERINTENDENT

PROJECT COORDINATOR: RANDY WRIGHT

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BROAD OBJECTIVE: To help student be more aware of the weather and how it affects their daily lives.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. Who cares about the weather?	Discuss and list the activities and jobs that are affected by the weather.	Book - Everybody's Weather.
	List the activities and jobs on overhead projector.	Overhead projector.
	Have some students make a bulletin board showing some of the activities and jobs.	Magazines Construction paper
	Role play a situation affected by the weather.	Students bring materials related to role.
	View film.	Your Career in Meteorology

BROAD OBJECTIVE: To help students understand the weather elements.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. What are the six weather elements?	Read and discuss the following weather elements:	Books and encyclopedias.
	1. The temperature	Thermometer
	2. The air pressure	Barometer
	3. The direction and speed of wind. View filmstrip.	Anemometer _Winds Around the World_. SVE
	4. The humidity View filmstrip	Hygrometer _Humidity and How It Affects Us_.
	5. The kind and amount of precipitation. View filmstrip.	Rain guage. _Moisture and Precipitation in the Air_.
	6. The condition of sky View transparency.	Cloud chart. _Clouds_.

BROAD OBJECTIVE: To help students understand why the weather changes.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. What causes the weather to change?	View filmstrip.	Weather Changes and Their Causes.
	Students investigate air masses, weather fronts, highs and lows.	Books.
	Class discussion on air masses, weather fronts, and highs and lows.	
	View filmstrip.	Air Masses and Weather Fronts.

BROAD OBJECTIVE: To help students understand how to measure the weather.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. How is the weather measured?	Divide class into groups to investigate the instruments used to measire the weather. Have each group make one of the following instruments: 1. Barometer 2. Thermometer 3. Anemometer 4. Weather Vane 5. Wet-dry bulb thermometer 6. Hygrometer 7. Rain Gauge Class discussion to compare the actual instruments to student-made instruments.	Books. Resource book: Science For The Elementary School by Edward Victor.

BROAD OBJECTIVE : To help students understand how the weather is forecast.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. What is the work of the weatherman?	View filmstrip.	How To Forecast the Weather.
	Have students set up a weather station using instruments made by students.	Student-make instruments.
	View film.	Weather Station.
	Have students make readings each day.	Field trip - NRCC Weather Station
	View filmstrip.	Visiting A Weather Station.
	Collect and compare forecast with actual weather.	
2. How are weather maps used?	Divide class into groups to study weather maps.	Weather maps. Woodrum Airport U.S. Weather Bureau
	Have students display: air masses, fronts and highs and low on felt map each day.	Felt map.
	View filmstrip.	Meteorologists.
3. How do weather satellites aid in forecasting the weather?	Read and discuss weather satellites.	Books.
	Have some students make diagrams, models, and/or bulletin boards on weather satellites.	Resource person from Woodrum Airport Weather Bureau.

CONTINUED

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
	View film.	Film - Weather Eye in The Sky.

BROAD OBJECTIVE: To help students understand violent weather.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. How may a thunderstorm form?	View film.	Film - Weather Understanding.
	Read and discuss how thunderstorms form.	Books.
2. What causes lightning and thunder?	View film.	Film - Thunder and Lightning.
	Read and discuss causes of lightning and thnuder.	
3. How do hurricanes and tornadoes differ?	View films.	Film - Tornado Hurricane Watch
	Discuss differences.	
	Have some students make charts and diagrams showing differences.	Poster, magic markers, crayons,etc.
	Collect pictures showing storms and damage. Display on poster board or bulletin board.	
	Show film.	Unchained Goddess.

BROAD OBJECTIVE: To help students to be aware of research in controlling the weather.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. Can man control the weather?	Have students investigate the six areas in which research toward weather control is being directed. Areas of research: 1. increasing rainfall or snowfall. 2. inhibiting the fall of hail. 3. getting rid of fog. 4. curbing lightning. 5. controlling hurricanes and other violent storms. 6. large-scale modification of climate. Prepare a panel discussion on "Should The Weather Be Controlled?"	Library research.

CULMINATING ACTIVITY

Make a collection of "Weather Sayings" and decide which sayings have any scientific basis based on information gained in the unit.

CAREER EDUCATION PROGRAM

RADFORD CITY SCHOOLS

UNIT TITLE: THE BANK

APPROXIMATE GRADE LEVEL: GRADE 6 OR 7

PROJECT SITE: RADFORD CITY SCHOOLS

PROJECT DIRECTOR: DR. JAMES E. RUTROUGH, SUPERINTENDENT

PROJECT COORDINATOR: RANDY WRIGHT

THE CAREER EDUCATION PROGRAM
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INTRODUCTION TO: The Bank

This unit was written for implementation in a seventh grade math class. The suggested activities should provide the students with an understanding of money and banking in the American economy and an understanding of the total operation of banking. The services that the bank provides to a community are stressed along with the various occupations associated with banking.

Student involvement and participation are encouraged so that they might relate occupations in the bank to their interests and abilities.

MOTIVATING ACTIVITIES	RESOURCES AND MATERIALS
Hand out play $100 bills to each student. Tell them to pretend this money is real. Then ask what each child would do with this money. Class discussion around spending and saving. Some students can tell how they have earned money. Some discussion will develop on the "worth" of items.	

BROAD OBJECTIVE: To help the students become aware of the services of banks.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. What services do banks provide for the community? Checking account Savings account Loans - short-term long-term Christmas funds Purchase of savings bonds. Safety deposit boxes Trust funds Bankamericard and Master Charge. Purchase of savings certificates. Wills & executors	View 16mm film on bank services "How to Use Your Bank." Read pamphlets: Let's Learn Money (good) Using Bank Services Role play situations to demonstrate the services provided by banks. Let the students make up skits to represent each service. Make a collage illustrating banking services with either pictures or drawings. Begin a vocabulary list of banking terms.	Film: "How to Use Your Bank" available Virginia Bankers Assoc. (Order early)
2. What interest do you receive on a savings account?	Encourage students to start a savings account. Have reading table supplied with books and pamphlets on banking.	Books from library: (Give reports on readings) Sootin, Let's Go To a Bank Rees, At The Bank Rosenfield, Let's Go To The U.S. Mint Campbell, Nails To Nickels Reinfeld, How to Build a Coin Collection Browin, F., Coins Have Tales To Tell
3. How do banks earn their money?		

CONTINUED

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
		Hutchinson, Coins Masters & Reinfeld, Coinometry Arnold, Money Wade, From Barter to Banking
	Have a local banker come to class to tell about bank services. The students should plan questions they want to ask.	Local banker.
	Have students write their impressions of the discussion and explanations of the resource person. (language arts)	
2. What are the kinds of banks? A. Commercial banks B. Savings banks C. Central banks D. Trust companies E. Others (credit union, mortgage companies)	Divide the class into 5 groups. Each group can research one kind of bank and its functions. Later each group can report to the class using panel techniques. Panel shculd be a free exchange of information involving all students.	Encyclopedias Library books
		Trust officer from local bank.
		Credit union official from a local credit union.

CONTINUED

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
	Savings bank official to explain services provided by savings and loan companies.	Savings bank employee (First Federal Savings & Loan)

BROAD OBJECTIVE: To help the student become aware of what money is and how it functions.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. What is money and how is it made?	View film, "Money and Its Uses."	Film: "Money and Its Uses" available from Virginia Bankers Association.
	Students give oral reports on the U.S. Mint and the making of money.	Book: Rosenfield, Let's Go to the U.S. Mint. Encyclopedias
	Ask students to bring coin collections to show to the class. Discuss collection of coins.	Library books on reading table. Resource person to bring coin collection to class.
2. What are the functions of money?	Class discussion of why we need money.	

BROAD OBJECTIVE: To help the students become aware of the overall operation of banks.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. How does a bank operate?	Local banker to visit class and explain bank reserves, the clearing of checks, and check travels. Students should view actual cancelled checks and be allowed to ask spontaneous questions.	Local banker. Pamphlets and books on reading table.
	Individual student research on bank operations.	
	View filmstrip, "Travel of a Check."	Eyegate filmstrip: U17004 Travel of a Check
2. What is the Federal Reserve System?	Read about formation of Federal Reserve System.	Encyclopedia Library books Pamphlets
	Students create display on a large wall map and mark off the areas of the Federal Reserve System. Diagram flow of money from U.S. Mint to a local bank.	
3. Why was the Federal Reserve System established?		

BROAD OBJECTIVE: To help the students become aware of the occupations associated with banking.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. What are the careers involved in banking? Some are:	View film, "A Banking Career."	Film: A Banking Career, a film available from Virginia Bankers Assoc.
Cashier 1. Mail teller 2. Savings teller 3. Collection teller 4. Ass't. head teller 5. Head teller 6. Assistant cashier 7. Cashier 8. Loan officer 9. Manager	Field trip to bank to see the various working areas and departments. Request information about the jobs observed.	Field trip.
Clerical 1. Sorting clerk 2. Account analyst 3. Machine operator 4. Clearinghouse clerk 5. Ass't. transit dept. 6. Manager transit dept.	Departments: Loans Business Savings Checking Bookkeeping Cashiers Tellers Bank Vault Safety Deposit Box Business Forms Security Devices	
Bookkeeping 1. Machine operator 2. Audit clerk 3. Bookkeeper 4. Ass't. bookkeeper 5. Accounting clerk 6. Balance clerk 7. Payroll clerk 8. Supervisor	Class discussion and analysis of the different activities observed should follow the field trip.	

CONTINUED

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
Data Processing 1. Sorting machine operator. 2. Keypunch operator 3. Verifier 4. Programmer 5. Supervisor of computer operations. Secretarial 1. Typist 2. Clerk-Typist 3. Stenographer	View the filmstrip, "The Banker."	Filmstrip: The Banker(Eyegate)
	Make a listing of all the known banking occupations. Find out the education, salary scale and job description of each(student research).	Personal contacts. SRA occupational briefs.
	Have parents who work in a bank come to class to discuss their jobs.	
	Make a bulletin board showing the many phases of banking as related to the world of work.	
	Students make a telephone survey to compare the services of local banks. The table to be used is attached.	

BANK SERVICES

Name of Bank	Safety Deposit	Safety Deposit Charges	Types of Loans: Home, Auto, Business, Personal, Education	Loan Rates	Interest Paid on Savings Account	Bank by Mail Service	Offer Drive In Service	Parking	How Do You Rate Their Service

CULMINATING ACTIVITY: Plan a model bank and carry out simulated banking activities.

CULMINATING ACTIVITY	RESOURCES AND MATERIAL
Set up the necessary banking departments to carry out the following activities: (Students will receive tokens from other teachers for tasks well done, etc. A certain number of tokens may be spent to have the opportunity to do a "fun" activity such as paint or work a puzzle)	Refrigerator box for teller's window. This activity is appropriate for sixth grade use.
1. Writing checks 2. Filling out deposit slips(use tokens) 3. Filling out savings slip. 4. Savings account passbook 5. Figuring interest on savings a. daily b. monthly c. quarterly d. yearly 6. Compound interest on savings account 7. Loaning money for personal reasons(use tokens)	
8. Forms of collateral 9. Fill out loan payment book a. car payment b. house payment c. television payment(use tokens)	Discuss reasons people borrow money and the importance of credit rating.
10. Sorting and preparing money for bank deposits. The students guided by the teacher could count money from the lunch program.	Retail credit resource person.

CONTINUED

CULMINATING ACTIVITY	RESOURCES AND MATERIAL
a. pennies b. nickels c. dimes 11. Using shoe boxes, set up a model of a bank safety deposit box system. The boxes could be numbered and rented out for certain time periods to different students. These boxes could be used to hold pens, pencils, scissors, etc. Set up rules for depositing and withdrawing items from the safety deposit boxes. Students could design the forms to use for all the banking operations or blank forms can be obtained from a local bank.	

SUBJECT MATTER TIE-IN

Science

1. Exploring the materials of which money is made.
2. Studying the alarm system.
3. Vault(materials of which it's made)
4. Wear and replacement of money.
5. Make an alarm system.

Social Studies

1. Location of Federal Reserve Banks.
2. History of banking.
3. American economy.
4. Bank failures(depression, recession)
5. Laws regulating banking.
6. Money and coins in other countries.
7. Different types of money that U.S. uses in comparison to the money of yesterday.
8. Stocks and stock market.

Language Arts

1. Vocabulary list of banking terms.
2. Penmanship.
3. Letter applications.
4. Notices of payments overdue.
5. Conversation with customers.
6. Applying for loans.
7. Reports on field trip to bank.
8. Reports on readings

Art

1. Posters
2. Maps
3. Making checks and bank forms.
4. Design layout of the model bank.

Music

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"Money and Its Uses"
"A Banking Career"

4. *Pamphlets*:

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Using Bank Services

5. *Single Cassettes*:

Bank Clerk/Teller. (American Occupations series) Educational Sensory Programming.
Getting to Know the Bank. Troll Associates, 1971.

CAREER EDUCATION PROGRAM
RADFORD CITY SCHOOLS

UNIT TITLE: WHAT'S IN AN AD?

APPROXIMATE GRADE LEVEL: GRADE 6 OR 7

PROJECT SITE: RADFORD CITY SCHOOLS

PROJECT DIRECTOR: DR. JAMES E. RUTROUGH, SUPERINTENDENT

PROJECT COORDINATOR: RANDY WRIGHT

THE CAREER EDUCATION PROGRAM
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PHONE: 1-703-639-6673

BROAD OBJECTIVES:

1. To acquaint a student with the careers in advertising.
2. To increase vocabulary and classify word groups.
3. To create advertisements for various media.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. Are any of your families involved in advertising?		
2. Are you and your family involved as consumers? Cite examples.		
3. What are familiar modes of advertising? T.V. magazines, newspaper, radio	Discuss these questions.	*Progress in English*, p. 28-29
4. What are the careers in advertising?	Bulletin board listing different occupations in advertising. Research in small groups of 2 or 3 the 10 careers and write its: 1. Working Conditions 2. Personal Qualifications 3. Educational Requirements	Career Brief - B-173 Advertising Workers, Educational Dimensions Corp., N.Y. *Encyclopedia of Careers and Vocational Guidance*, Revised Ed., Vol. I Planning Your Career. Hopke-author, J. G. Ferguson Publishing Co., Chicago, Ill., Doubleday & Co., Inc.

CONTINUED

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
	Worksheet on terms in advertising.	Glossary in Encyclopedia of Careers.
	View filmstrip and listen to cassette.	406-Writing Careers in Advertising - Cassette. Career As A Copywriter - Filmstrip.
	Bring to class an eyecatching ad for a product from a magazine.	For an example use ad on p.30, Progress in English.
5. What are 'loaded" words?	Discuss the words in class. Do duplicating master 68.	Reading Power, 6 - Unit 8, page 354-365, "Critical Reading" and Masters.
	Underline loaded words in magazine advertisment.	Sharing Ideas 6, Pollock and Straub, MacMillan, New York, 1960. Chapter 8. Own magazine.
6. What word class are loaded words?	Discuss examples and placement to decide whether they are adjectives or adverbs. Go back and circle those words used as adjectives. Make a collage of magazine articles. Field trip through business section of town. Look at window displays, list and/or draw	

CONTINUED:

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
	methods used to encourage buying from the trip.	
	Field trip to supermarket to look at section food displays.	Progress in English, p. 31.
	Choose a partner, think of a favorite food, and work togethter in making an advertisment for it.	
	With small groups, organize an advertising campaign.	Growth in English, p. 34 & 35.

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CAREER EDUCATION PROGRAM

RADFORD CITY SCHOOLS

UNIT TITLE: "GET THE SCOOP - A NEWSPAPER CAREER"

APPROXIMATE GRADE LEVEL: GRADE 6 OR 7

PROJECT SITE: RADFORD CITY SCHOOLS

PROJECT DIRECTOR: DR. JAMES E. RUTROUGH, SUPERINTENDENT

PROJECT COORDINATOR: RANDY WRIGHT

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INTRODUCTION TO: "GET THE SCOOP - A NEWSPAPER CAREER"

This unit is designed for the 6 - 7th grade level in language arts and/or reading.

It develops the skills of collecting and reporting news data.

Since these grades may be involved in editing a newspaper and reporting current, it is important that they learn the occupations related to news gathering.

BROAD OBJECTIVES:

1. To make students aware of present day careers in newspaper work.
2. To make students aware of journalistic terms in relationship to reading and writing a newspaper.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. What is news?	Students discuss and conclude a definition for news: "Anything that is interesting enough to report".	Newspapers.
2. How do we classify news?	Circle local news in red. Circle state news in blue. Circle national news in black. Circle international news in green.	Newspaper (The Roanoke Times) Crayons and/or colored pencils.
3.	Discuss how a news article is developed (lead and supporting details) by answering the questions: Who? When? Where? How? Why? What?	Reporter from local newspaper.
4.	Discuss salaries, schedules, training, past experiences, etc.	Same reporter.
5. How are the questions: Who? Where? When? Why? What? answered in a newstory?	Study an actual newstory and list the answers to the 5 questions.	Growth in English, Grade 7. Page 265, "Eyewitness - Reporting An Event" "Story of an Eyewitness" by Jack London, Adventure for Readers, page 507.
6. How can I answer the 5 questions in a news article from a memory?	Use a well-known fairytale or nursery rhyme to write a newstory concentrating on answering the 5 questions. Share stories orally with class.	Example: Poster from magazine, "Learning".

CONTINUED

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
7. How can I answer the 5 questions in a newstory as an eyewitness?	Report on an actual event such as: Skit presented by a person (informal such as entrance to deliver something to teacher.)	Resource person.
8. What do we learn from a newspaper?	Interest center.	"How to get more out of your newspaper" - booklet available from "The Roanoke Times".
9. What are common newspaper terms?	Worksheet with terms to match by using the glossary.	"Your Newspaper -- A Living Textbook" from The Roanoke Times. Glossary in back - "Newspaper Terminology"
10. How can I locate different parts of the newspaper? Example: Index, Ears, etc.	Study poster on parts of paper then using a newspaper locate parts and label them with the same number according to study sheet.	Study sheet included in back. Newspaper for everyone. Colored pencils or crayons.
11. How do photographs add to a newstory?	Discuss choosing appropriate scene, angles, lighting, equipment, captions, salary, and hours.	Photographer from local newspaper.
12. Could a photograph add to the article (s) I've written?	Take photographs.	Camera, film.

CONTINUED

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
13. What are newspaper jobs?	Write job titles, descriptions, and qualifications.	Posters on Careers for Good Writers. Pencil and paper. Chalkboard or overhead. Poster from "Learning Magazine". Briefs - Editor #69 Reporters #216 Research Booklets - Journalism #19 Newsreporter #174 Newspaper Publishing #189 Photo Journalism-News Photography-#202 Sportswriter - Reporter - Journalist #266
14. How could I get a newspaper job?	Fill in applications for above job titles and submit to teacher.	Job application form.
15. How can we work together to produce a newspaper?	Designate job, select articles previously written, put together, cover with clear contact paper. Display.	Paper, typewriter.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
16. What have we done?	Film viewing.	#37708 - "Newspaper Story" 15 min. - Radford or State. and/or "The Newspaper" - Sound Filmstrip. and/or #65908 - "Newspaper Serves Its Community" - 14 mi[illegible]. - State.
	Small groups may wish to see.	"Jobs of a Printer" - Cassette and filmstrip.
17.	Field trip to The News Journal.	
18.	Bulletin board on 'Great Reporters' as students study the unit, they may add great news person to the board and share a report on their contributions to the news world.	Adv. for Readers, Jack London, etc.

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Careers in Photography, Educational Dimension Corp.

Posters:

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Learning, Magazine.

SRA Briefs:

Research booklets from Careers Research Monographs.

Films:

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Booklets:

"Your Newspaper - A Living Textbook" and "How To Get More Out Of Your Newspaper" from The Roanoke Times.

STUDY SHEET ON THE NEWSPAPER 6

Name ______________________________

I. The front page contains the following parts:
   (1) flag
   (2) leads
   (3) major news item
   (4) dateline
   (5) by-line
   (6) main headline
   (7) index

II. A headline is mainly of two parts - the main headline and the "decks" which are below the headline and they provide additional information.

III. A summary of a news story that comes at the beginning of an article is called the lead.

IV. The lead in a newspaper story usually answers the questions Who? When? How? Where? What? and Why?

V. The most important information is given in the lead at the beginning of a news story. Important details follows immediately after the lead. Less important details are given at the end.

VI. Some types of leads are summary, quotations, pictures, questions and background.

VII. A headline that gives the reader a misleading idea is called a slanted headline.

VIII. Editorials express the opinion of the editor.

IX. Any matter that is considered interesting enough to report is news.

X. News is classified as local, state, and national or international stories.

MATCHING: PUT LETTER IN BLANK FOR ITS CORRECT TERM.

_____ 1. Banner Headline
_____ 2. Dateline
_____ 3. Ears
_____ 4. Editorial
_____ 5. Flag
_____ 6. Headline
_____ 7. Index
_____ 8. "Jump" story
_____ 9. Lead
_____10. News
_____11. Preview
_____12. Slanted Headline

A. The name of the newspaper.
B. Report of an interesting event.
C. A headline in large letters running across the page.
D. A brief alphabetical listing with page numbers indicating where items may be found.
E. Bits of information on either side of the flag.
F. Date and place of a news story.
G. Summary at the beginning of a news story.
H. Title of a news story.
I. Opinion of the editor.
J. Advance information about a radio or T. V. program.
K. A misleading headline.
L. Stories continued from the front page.

Seek and Circle 10 newspaper terms in the puzzle. They are written horizontally, vertically, and diagonally.

E C A P T I O N
D E P O D B X R
I Q N O U Y D T
T D E C K W A Z
I G R S B I E G
O M P P H J L O
N L E G M A N L

CAREER EDUCATION PROGRAM

RADFORD CITY SCHOOLS

UNIT TITLE: COMMUNICATION THROUGH CONVERSATION
"CONVERSATION THAT TURNS YOU ON!"

APPROXIMATE GRADE LEVEL: GRADE 6 OR 7

PROJECT SITE: RADFORD CITY SCHOOLS

PROJECT DIRECTOR: DR. JAMES E. RUTROUGH, SUPERINTENDENT

PROJECT COORDINATOR: RANDY WRIGHT

THE CAREER EDUCATION PROGRAM
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INTRODUCTION TO: Communication Through Conversation
"Conversation That Turns You On!"

This unit has been developed to be used with 6th and 7th grade students. It is basically a language arts unit but other subject matter can relate to it easily. The unit may also be modified to work with other grade levels.

MOTIVATING ACTIVITIES	RESOURCES AND MATERIAL
Imagine how early man in prehistoric times, before they knew how to talk, might have expressed the thoughts which you express today by the following words: 1. This is mine 2. Go away! 3. Come here! 4. Hush! 5. Hurry! 6. Good-by!	

BROAD OBJECTIVE: To help students become aware of speech as it applies to job roles and careers.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. What is conversation?	Students discuss why conversation is a source of communication in every day life: 1. Home 2. School cafeteria library main office 3. Jobs observe duties plus necessary conversation 4. Recreation observe directions necessary in P.E. Correlate all of this with history of speech and its need in civilization from early to modern times.	Text: History of Language
2. What occupations require good conversation?	Let students list various occupations. Discuss each of the occupations and describe how conversation is essential in each. Suggested occupations for consideration are: Editor Reporter Teacher Sales person Radio-TV announcer Librarian Clergy Lawyer Nurse Doctor Stenographer Receptionist Insurance sales	

CONTINUED

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
3. What are the essentials of good conversation?	Students discuss: 1. Talking and listening parts in conversation (listen or thy tongue will keep thee deaf)	
	2. Topics chosen by students to talk about in ordinary conversation. Students engage in unrehearsed class conversation. Let each student hear his voice on the tape recorder. Check for inflection and enunciation. Have students list ways and means of improving their own conversation.	Tape recorder or cassette recorder.
	3. Aides in introduction of people. Introduce: Boys to girls Girls to boys Men to women Women to men Younger to older Older to younger Discuss response and conversation.	
	4. Students observe the necessity of courtesy in all communication and jobs. Compare pleasant to unpleasant conversation.	

CONTINUED

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
	Discuss how jobs and life are brighter if one thinks "you instead of thinking I".	
4. What type of conversation is necessary for a job interview?	Have students role play people waiting for a job interview. Have students notice the personal appearance of people. Students prepare conversation and props.	
	Have each student interview for a specific job.	Tape recorder or cassette recorder.
	Have each student complete a job application form.	
	Have each student write letter of resignation.	
5. How is conversation an important part of living with others?	Students discuss: 1. Aides to good conversation at: a. home b. school c. recreation d. job 2. Public relations: Have students prepare a job classification chart of many occupations dependent on conversation or related to conversation.	Resource people to speak to class on how conversation is used in their respective jobs.

CONTINUED

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
	3. Have students prepare bulletin board showing job class available that depend on good conversation.	Bulletin board material needed.
6. How is conversation used in the news media?	Discuss occupational conversation in the news media. 1. newspaper 2. television Have students observe technicians' role in putting on news programs. Stage Klassroom Kwiz in class. Have students make props. Have students develop questions to be used.	Resource person: Editor Reporter Photographer TV
	3. Radio	Field trip to radio station or resource person from station.
	4. Telephone Emphasize importance of voice quality in reflecting personality, particularly over telephone. Have students draw their perception of peoples' faces behind the voices in cartoons.	Resource person: Operator
	Listen to humorous tape recorded voices of typical telephone personalities. Have students list occupations related to telephone industry.	Resource people: Supervisor Lineman Service and repair

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Dale Carnegie Pamphlets

Emi[illegible] Book of Etiquette

CAREER EDUCATION PROGRAM

RADFORD CITY SCHOOLS

UNIT TITLE: CAREERS THROUGH KNOWLEDGE OF
SIMPLE ARITHMETIC

APPROXIMATE GRADE LEVEL: GRADE 6 OR 7

PROJECT SITE: RADFORD CITY SCHOOLS

PROJECT DIRECTOR: DR. JAMES E. RUTROUGH, SUPERINTENDENT

PROJECT COORDINATOR: RANDY WRIGHT

THE CAREER EDUCATION PROGRAM
THE RADFORD CITY SCHOOLS
1612 WADSWORTH STREET
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PHONE: 1-703-639-6673

INTRODUCTION TO: "Careers Through Knowledge of Simple Arithmetic"

This unit on "Careers Through Knowledge of Simple Arithmetic" is designed for use with sixth and seventh grades. Through this unit students can gain a general knowledge of how arithmetic is important to them an individual, how it is important in the home, how it is important in recreation, and how arithmetic plays an important role in different careers.

BROAD OBJECTIVE: To help students understand how knowledge of simple arithmetic is needed in everyday living and on the job world.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. How is arithmetic important to you as an individual?	Students will participate in all activities to answer the need of simple arithmetic. Class discussion: 1. Allowances and how they are used. 2. Budget of allowance. 3. Make charts of job responsibilities at home. 4. Show how they are paid for these jobs-other than in money. (Rely on realization of bed and board given at home.)	
2. How is arithmetic important in the home?	Students discuss family need of arithmetic. Father of student appears before class to explain his role in management of finances at home. Examples: Budgeting his salary, measurements, etc. necessary in repairs at home. Mother may appear to do likewise-to show how she can enlarge or shorten recipes to fit size of family and how to use clothes patterns when sewing for family. Examples: Planning and management concerning food needed for	Resource people: Mother Father

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
	family. Measure-regarding recipes, cooking, draperies, carpeting.	
3. How is arithmetic important at school other than in the regular class of mathematics?	Students discuss: 1. Lunch money-ice cream 2. Rental fees 3. Class picture fees 4. Library fee for overdue books. 5. Activity fee- school newspaper student handbook entertainment in auditorium Students assume responsibility of collecting money, especially daily lunch and ice cream. 6. In art class- measurement Alphabet cutouts from construction paper measures 2"x1 1/2" pasted on 9" x 12"(well balanced on sheet)	
	7. Physical education instructor will guide students through physical check-ups Height-weight Physical fitness(measure of distance-broad jump, dash, etc. Have students comput average height and weight in class.	Physical Education Instructor

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CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
	Make a graph showing weight and height of students.	
4. How is arithmetic important in recreation?	Students participate individually or in groups. Students discuss prices of: 1. movies 2. high school sports 3. plays 4. other activities Role play financial end for football season. Hands-on - Ticket booth Concession stands 5. Hobbies Records Tapes Collections - Stamps Coins Rocks 6. Bicycles and repairs	Materials needed:
5. How is arithmetic important in your jobs after school and during vacation?	Students discuss jobs and pay: 1. Baby sitting 2. Mowing lawns 3. Newspaper routes 4. Other jobs Director of News carriers may appear before class.	Books related to baby sitting, newspaper routes, etc. Resource people: Students

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CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
6. How is arithmetic important in the careers you may choose, or in the world around you?	Have students list and discuss as many careers as they can that deal with arithmetic. Examples: 1. Waitress-bus boy 2. Grocery clerk 3. Department store clerk 4. Carpenter 5. Truckdriver 6. Secretary 7. Insurance salesman 8. Other careers Have resource people in any of these jobs appear before class. Take field trips to: Grocery store Department store Short order restaurants	Filmstrips Books in library.

CULMINATING ACTIVITY:

CULMINATING ACTIVITIES	RESOURCES AND MATERIAL
Skits - written by students showing arithmetic in action in the community.	

SUBJECT MATTER TIE-IN

Language Arts

1. Spelling lists of math terms
2. Writing of skits

Social Studies

Discuss contributions made to field of mathematics by:

1. Early civilizations
   Babylonia
   China
   Arabia
   Egypt
   Greeks
   Romans
2. Renaissance period
3. 1700's
4. 1800's
5. 1900's - present day

Science

Discuss the following topics as they relate to arithmetic:

1. Time
2. Travel-train, auto, sea, space
3. Weather
4. Cooking(food unit)
5. Photography
6. Metric system

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CAREER EDUCATION PROGRAM

RADFORD CITY SCHOOLS

UNIT TITLE: MACHINES AND ENGINES

APPROXIMATE GRADE LEVEL: GRADE 6 OR 7

PROJECT SITE: RADFORD CITY SCHOOLS

PROJECT DIRECTOR: DR. JAMES E. RUTROUGH, SUPERINTENDENT

PROJECT COORDINATOR: RANDY WRIGHT

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MOTIVATING ACTIVITY: Invite a resource person (archaeologist) to bring a collection of ancient tools and speak to the class about tools and why early man found a need for them.

BROAD OBJECTIVE: To help students understand why man uses machines.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. Why does man use machines?	Students collect pictures to make a collage of common machines for display.	Magazines Paper
	Students interview their parents and list the machines (or tools) that each uses in his job. Students also take picture of one parent at work, if possible, for display in room.	Small cameras.
	Class discussion of the extensive use of machines and how even simple tasks are made easier with machines.	
	Have students operate a variety of hand tools and kitchen appliances showing how work is done with them.	Hammer, saw, screwdriver, scissors, egg beater, etc.

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CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
2. What do machines do?	Have students complete investigations showing how machines: a. transfer a force b. increase amount of a force c. change the direction of a force d. increase speed or distance.	Materials will vary depending on the specific investigations chosen by the teacher. Reference: Science for the Elementary School by Edward Victor. MacMillan.
	View film loops.	Film loops on machines and how they work. (McHarg)
	Set up reading table with a variety of books on machines.	Library books. Pamphlets.
	View film loops.	Film loops: Energy Makes It Move More Motion Requires More Energy

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BROAD OBJECTIVE: To help students become familiar with the six simple machines.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. What are six simple machines?	View filmstrips.	Filmstrips: The Work of the Wheel and Axle. The Work of the Lever. The Work of the Pulley. The Work of the Inclined Plane, Screw and Wedge.
	Read and discuss the six simple machines in the text.	Text: Concepts in Science. Brandwein, Cooper, Blackwood and Hone.
	Divide class into six exploratory groups. Each group will be responsible for constructing a model of one of the following and demonstrating how work is done with it: a. Lever (1st class, 2nd class, 3rd class) b. Wheel and axle. c. Pulley (fixed and movable). d. Inclined plane. e. Screw. f. Wedge.	Resource Books: Concepts in Science. Science for the Elementary School. Scrap lumber, cardboard, nails, pulleys, thin cord, etc.
	Show transparencies on the six simple machines for review.	Transparencies on machines.
	Students report to class on famous inventors.	

BROAD OBJECTIVE: To help students understand that compound machines are made from a combination of simple machines.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. What are compound machines?	Students identify the simple machines that make up common compound machines as the scissors, can opener, pencil sharpener, meat grinder, water faucet, wrench, nutcracker, etc.	Students volunteer to bring the various common machines to class.
2. How are gears used?	View filmstrip.	The Use of Gears.
	Students make models of gears and manipulate these.	Cardboard - materials will vary.
	Examine a bicycle and discuss the gears with a chain.	Have a student bring a bicycle to class.

BROAD OBJECTIVE: To help students understand how friction affects work done by machines.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. What causes friction?	Students examine smooth and rough surfaces with hand lens, magnifying glasses and microscopes.	
	Do investigation into the force of friction.	*Concepts in Science*, p. 181.
2. How can friction reduce the amount of work done?	Have students rub their hands together and note the heat produced by the resulting firction.	
	Complete investigations that demonstrate the following concepts: a. The nature of the materials affect friction. b. The nature of the surfaces affects friction. c. The amount of area between surfaces affects friction. d. The pressure of the surfaces against each other affects friction. e. Sliding friction is less than starting friction. f. Rolling friction is less than sliding friction. g. Lubricants reduce friction.	Resource: *Science For The Elementary School*.

CONTINUED

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
	h. Rollers, wheels, ball bearings, etc. reduce friction. Class discussion of how friction can be helpful (on icy roads, etc.).	

BROAD OBJECTIVE: To help students understand that engines provide the force needed to run complicated machines.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. Why are engines necessary?	View film.	Film: Energy and Work.
	Read and discuss how man has used the forces of wind, moving water, and heat on gases to supply force.	
	Students research and report on the industrial revolution.	Library books and reference books.
2. How does the windmill supply force?	Have students read and report on windmills (wheel and axle machine) and their uses.	Books, reference books, library books.
3. How does the water wheel supply force?	Students diagram the different kinds of water wheels.	Machines - Life Science Library by Robert O'Brien
	Read and discuss the different kinds of water wheels.	

BROAD OBJECTIVE: To help students gain an understanding of different kinds of engines.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. How does the steam engine work?	Do investigations to demonstrate how steam can be used to do work.	Text: *Concepts in Science*.
	Have students diagram a steam engine.	
	Students research and report on the different uses of steam engines.	
	Construct a steam generator to demonstrate how a steam turbine works.	*Science For The Elementary School*.
	View film.	Film: *Engines How They Work*.
2. How does the gasoline engine work?	Read and discuss the gasoline engine.	Book: *Concepts in Science*.
	Students draw diagrams of gasoline engine cylinders.	
	Display posters of gasoline engines on bulletin board.	Posters from General Motors.
	Students research to find where gasoline engines are used and how many cylinders these engines have.	

CONTINUED

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
	Have students look at the engines of several parked cars at school and determine the number of cylinders of each and identify certain parts.	Teachers cars.
3. How does the Diesel engine differ from the gasoline engine?	Discussion of comparison of the cylinder operation of the Diesel engine with that of the gasoline engine.	
	Draw diagrams or make models of Diesel engine cylingers.	Encyclopedias.
	Discuss the advantages and disadvantages of the Diesel engine. Make a list.	
4. How does the jet engine work?	Students diagram a jet engine.	Text: Concepts in Science.
	View film.	Film: Jet Propulsion.
	Discuss Newton's Law of Action and Reaction.	
	Let students attempt to design a car or cart that does work by jet propulsion.	Materials obtained from home.

BROAD OBJECTIVE: To help students become aware of the variety of careers involved with machines and engines.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. What are some careers related to machines and engines?	Make a poster listing as many job opssibilities that students name. Leave the poster on display to add others later.	Poster Board.
	Students do individual research on careers in media center.	Pamphlets from General Motors.
	Invite personnel manager from Inland Motors Corp. to tell about job possibilities there.	
2. What activities are involved in the careers related to machines and engines?	Teacher video tape the work activities within Inland Motors and interview several employees asking questions about their jobs and responsibilities. Show video tape to class and discuss the different activities visible.	
	Invite an automobile mechanic to class to describe his job and his feelings toward his work.	
	Take a field trip to the high school machine shop. Interview high school students involved there to find out about their future plans, reaction to the industrial training, etc.	

CULMINATING ACTIVITY: Have students make or design a compound machine that will actually do work, using the simple machines studied.

CAREER EDUCATION PROGRAM

RADFORD CITY SCHOOLS

UNIT TITLE: CHEMISTRY

APPROXIMATE GRADE LEVEL: GRADE 6 OR 7

PROJECT SITE: RADFORD CITY SCHOOLS

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BROAD OBJECTIVE: To help students become aware of the many careers that need some knowledge of Chemistry.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. What careers need some knowledge of Chemistry?	Bulletin board - Careers in Chemistry. Have students investigate various careers in Chemistry. Discuss and list careers. Some students make a poster listing careers for class display. View Tr. on Chemistry Related Careers. View Film - Challenging Careers in Chemistry.	Books and Booklets: A Bright Future for You as a Chemical Technician. Career Opportunities in Chemistry. Chemist. Chemistry Guidance Leaflet. Chemistry and Your Career. A Dozen Reasons Why Young People Choose Chemical Industry Careers. Finding Employment in the Chemical Profession. Is Chemical Technology the Career for You? Tr. Film.

BROAD OBJECTIVE: To help students become aware of some famous chemists and their work.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. Who were the alchemists?	Have students read about the history of Chemistry.	Books.
2. What contributions have chemists made to our world?	Give students a list of famous chemists and have them investigate the work of several and report to class.	Encyclopedia and books.
	View film.	Film - Wonders of Chemistry.
		Resource person - Chemist from Radford College.

BROAD OBJECTIVE: To help students learn to use the equipment and measurement system of the chemist.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. What are some of the equipment used by the chemist?	Give students a list of equipment and demonstrate how each is used.	Equipment (will vary)
	Have some students make diagrams of equipment on poster for display in room.	Poster Magic marker
2. What system of measurement is used by the chemist?	View filmstrip.	Filmstrip - Metric System
	Have students make measurements of length, mass and volume.	Materials (will vary)

BROAD OBJECTIVE: To help students understand the properties of matter.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. What are the properties of matter?	View filmstrip.	Filmstrip - Introduction to Chemistry.
	Have students read about the following properties of matter: 1. Volume 2. Mass and weight 3. Inertia 4. Elasticity 5. Granular structure 6. Electrical nature	
	Have students demonstrate some of the above properties.	
	Have students test material for physical and chemical properties.	Reference for teacher: ESS - *Mystery Powders*. NSTA - *Atoms and Molecules*.

BROAD OBJECTIVE: To help students understand chemical and physical changes in matter.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. What is the difference between physical and chemical changes in matter?	Have students read about chemical and physical changes. Demonstrate (teacher) chemical and physical changes. Have students observe and identify changes. View film or films.	Book. Materials (will vary according to the various chemical and physical changes demonstrated) Films: Chemical Changes About Us. Explaining Matter: Chemical Changes. How Materials Are Changed.

BROAD OBJECTIVE: To help students understand the groups into which matter has been classified.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. How has matter been classified?	Discuss and list on overhead projector how matter has been classified into the following groups: 1. Elements - Atoms 2. Compounds - Molecules 3. Mixtures 4. Solutions, Suspensions, Colloids.	Overhead Projector. Resource person - Chemist from Radford College.
2. How do elements and compounds differ?	Read and discuss elements and compounds.	Book - Life and the Molecule
	View filmstrip.	Filmstrip - Elements, Compounds and Mixtures.
	Read and discuss how atoms and molecules relate to elements and compounds.	Book - Life and the Molecule.
	View two or more films to show how the chemist uses elements and compounds and how they are classified.	Films: Atomic Theory Erudence For Molecules and Atoms Chemical Families Family of Halogens Sodium Family World of Molecules World of Phosphorus

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
	View filmstrips.	Filmstrips: Atoms, Molecules, and Ions
	Explain and discuss the chemist's shorthand.	Periodic System.
	View filmstrips.	Filmstrips: Symbols, Formulas, Equations. Atomic and Molecular Weights.
	Explain how the chemist uses chemical equations to show what happens in a chemical reaction. Interested students may want to: Calculate molecular weight. Balance equations Solve equations	
	Have some students make molecular models of compounds.	Toothpicks Small styrofoam balls
	Make charts to display some common compounds and formulas.	Poster board Magic markers
What is a solution, suspension, and a colloid?	Read and discuss solutions, suspensions, colloids.	Book - Life and The Molecule
	View filmstrip.	Filmstrip: Solutions, Suspension, Colloids

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CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
	Experiments: 1. Study Solutions 2. Solubility of Substances in Water 3. Temp. and Solubility of Solids in Liquids 4. Ways of making Solids Dissolve More Quickly in Water	
	Have some students collect and display Elements, Compounds, Mixtures, Solutions, etc.	
CULMINATING ACTIVITY	Field trip to Chemistry Department at Radford College.	

CAREER EDUCATION PROGRAM

RADFORD CITY SCHOOLS

UNIT TITLE: OCEANOGRAPHY

APPROXIMATE GRADE LEVEL: GRADE 6 or 7

PROJECT SITE: RADFORD CITY SCHOOLS

PROJECT DIRECTOR: DR. JAMES E. RUTROUGH, SUPERINTENDENT

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INTRODUCTION TO: Oceanography

This unit is written for a seventh grade science class with emphasis on career opportunities currently available in and near the oceans. As the last frontier on earth, more information is being sought about the oceans in hopes that the wealth of resources there might be used to meet man's increasing needs. The career opportunities in this area will tend to increase in the future.

MOTIVATING ACTIVITIES	RESOURCES AND MATERIALS
Show film, Oceanography-Science of the Sea.	41605 Oceanography-Science of the Sea.

BROAD OBJECTIVE: To increase students' knowledge of the importance of the oceans.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. What is oceanography? The study of the ocean.	Discuss why it will be of benefit to increase our knowledge of the ocean. Read the quote by John F. Kennedy, "Knowledge of the oceans is more than a matter of curiosity. Our very survival may hinge upon it." Have students write letters for information concerning the oceans. Students begin to make individual scrapbooks on the oceans.	
2. What things does the ocean provide? Fish Industry: Food Iodine Fish oil(medicine, soap, etc.) Fish skin(billfolds) Mineral Products: Oil(mining) Gold(mining) Iron Uranium Sand, gravel,limestone Algae Food	Make a collage of products obtained from the ocean entitled, "Treasures from the Sea." Several assignments are given at one time so students may work at their own speed on individual research. Individual student research to explore the different products obtained from the fish industry. (In notebooks.)	Magazine pictures.

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CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
Additives in other foods Kelp	Divide class in groups. Each group can select a mineral and find out how man uses it. Then a class chart can be made. Several students may work on one chart.	
	Find magazine and newspaper articles about the oceans and ocean products(oil mining,etc.) for the scrapbooks. Have students bring old magazines to school for this.	Magazines and newspapers.
Aquaculture: Oysters Fish Seaweed Kelp Recreation: Boating Surfing Swimming Hobbies	Discuss how the flooding of rivers effects the growth an[illegible]ue of water crops.	
Transportation	View collections of sea shells of all types. Students can share their collections with the class.	Collection of seashells.

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CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
	View filmstrip, 'Marine Resources.' Have resource person come to class to talk about water safety.	Encyclopedia Brittanica filmstrip. Resource person: Game Warden.

BROAD OBJECTIVE: To help students understand the characteristics of oceans.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. How many oceans are there?	Make a list of all the major oceans and seas. Discuss the difference. (Social Studies tie-in)	
	Let the children locate these on the globe and large world map.	Globe or world map.
	Set up reading table with various books about oceans. Encourage students to read and look at the pictures.	See bibliography.
2. What minerals does ocean water contain?	Students compile in scrap-books a list of the various minerals found in the ocean. A chart has already been displayed.	
	Obtain a sample of water from the ocean, lake and tap water. Let the water settle and examine the bottom of the containers.	

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
3. What causes currents in the ocean? Winds Sun's heat Earth's rotation Land formation	View transparency, Ocean Currents. Draw a map of the oceans and indicate the major currents (for scrapbooks).	Transparency: Ocean Currents
4. What causes waves? Friction between wind and water.	View transparency, Waves. Have student fill a bowl with water. Let students take turns blowing across the rim of the bowl-then blow harder. Surface water ripples then form larger waves. Have students who have been swimming in the Atlantic Ocean describe their experiences in the waves.	Transparency: Waves Bowl or pan.
5. What causes ocean tides? Gravitational attraction of moon. Highs and lows every 12 hours.	View film, Ocean Tides. Have students give individual reports on erosion caused by tides & life cycles depending on the tides. Refer to Va. Beach erosion problem under study. Have students who have been to the seashore tell about	Film Books on reading table. Encyclopedias

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CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
	why it is important to know when the tides occur.	
6. How does temperature, pressure and light vary in ocean waters?	Class discusses these differences in an effort to get an understanding of what conditions occur in the ocean. Discuss how certain animals are suited for certain ocean regions.	
	Read section in text, Life, Its Forms and Changes.	Science text: P. 31-33
	View transparency, Characteristics of Ocean Water.	Transparency: Characteristic of Ocean Water.
7. What is the ocean floor like? Continental shelf Trench Plain Ridge Guyot Faults	Students draw a map of the ocean floor.	
	With a flour water mixture let students make a model of the floor of the Atlantic Ocean. Paint the model.	Materials needed: A - Flour B - Water C - Paper D - Cardboard base E - Salt

BROAD OBJECTIVE: To help the students become aware of the variety of life forms in the ocean.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. What kinds of plants live in the ocean? Phytoplankton Algae Kelp	View transparency entitled, Plant Life of the Oceans.	Transparency: Plant Life of the Ocean.
	Draw pictures of ocean plants in scrapbooks.	
2. What kinds of animals live in the ocean?	View film Secrets of the Underwater World.	Film: State 46309 Secrets of the Underwater World
	Study and learn to identify the various shells.	
	View transparencies of ocean animals.	Transparency
	Have students construct a diorama illustrating life in the ocean, both plant and animal.	Large cardboard box. Construction paper. Clay.
	Have students draw pictures of ocean animals in their scrapbooks.	
	Students make individual reports in scrapbooks.	
	Students dissect preserved starfish specimen(in groups of five).	

BROAD OBJECTIVE: To help students understand how the ocean is being explored and occupations associated with this exploration.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. How do oceanographers explore the ocean? a. SCUBA b. Bathyscaphe	Invite oceanography professor to tell the class what oceanographers do and tell about careers in oceanography.	Dr. Scolaro, Radford College
	View transparency on _Underwater Exploration_.	Transparency: _Underwater Exploration_.
	Review necessity for SCUBA gear.	
	Student research on different industries employing scuba divers.	
	For an extra assignment, students can prepare a HISTORY of oceanography.	Books Encyclopedias
	Make clay models of the various ships which have been designed to explore the ocean depths.	Clay
	Discuss the various jobs of people on the ship and the preparation of each.	
	Find magazine pictures of equipment and supplies aquanauts use.	

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CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
	Invite SCUBA diver to class to show his gear and tell principles of diving.	SCUBA Diver.
	View filmstrip, Ocean Engineering	Encyclopedia Brittanica filmstrip: A - Ocean Engineering
	Take a field trip to Claytor Lake. Observe wave action, take several samples of water, gather water plants, try to collect plankton and different algae types, collect sample of sand. After the trip, view the sand under the microscope. Try to identify the types of algae and plankton.	Field trip - Claytor Lake
2. What are other occupations associated with the ocean?	Have students investigate industries resulting from the sea. Letters for information may be sent.	
	View the filmstrip, A Career in Oceanography.	Encyclopedia Brittanica Filmstrip: A Career in Oceanography
	Make a bulletin board display of different careers.	
	Have a classroom quiz contest, girls va boys, to review all important facts.	

CULMINATING ACTIVITY:

CULMINATING ACTIVITY	RESOURCES AND MATERIAL
Prepare a skit or play depicting the problems and results of Sealab II. Refer to pictures and log of events in *World Without Sun*. Have students make the necessary gear and a model bathyscaphe to be used as props. Give presentation to another class. (See attached skit written by a student.)	Cousteau, J. I., *World Without Sun*, Harper and Row, 1965. Early, Margaret, Ed., *Reading To Learn*, "Men of the Sea," p. 325-335. Boxes, paint, construction paper, small lumber.

OCEANOGRAPHY SKIT

By: Lynne Rutkowski
Grade 7

Narrator: It's June, 1952, an underwater exploration is going to take place. All the technicians and oceanographers have checked and double checked their machines and figures.....

Luke: Ready to go to the underworld for three whole months?

John: You bet I am! I've been waiting for this for five years, and now that we're finally going to do it, I'm gonna make the best of it.

Narrator: I can bet you're wondering what that was all about. Well it all started when a man worked on an underwater inhabitance. He called it a bathyscaphe........

August: Well Carl, we've finally finished it. All the gauges are working and the levers work fine.

Carl: In all my years assisting you, Dr. Piccard, I thought I'd never see the day. While we were working on it, it seemed to take forever, but now it seems like we started it just a few days ago.

August: Well, now you've seen the day, and in five months it'll be in use, Underwater.

Narrator: So now you see who John and Luke are. They are the oceanauts who will be underwater for 3 months.

#1 Tech. Everythings set.

#2 Tech: Going down!

Narrator: As the submarine-like ship went slowly down into the blue-green water, I'm sure everybody's heart skipped a beat. Technicians, doctors, Scientists, and others must have been asking themselves the same questions: "Will they be safe?" "Will they succeed?"

Luke: When is the first time we go out to explore?

John: I don't know, I guess I'd better ask. Hello, Hello Mr. Rogers, when do we go out?

Mr. Rogers:(over the teletype) Maybe you'd better wait till an hour or so. We want to check and see if all the gauges are working.

John: O.K. Over and out.

Narrator: Hours later the two men went out into the bluish-green water to explore the unknown.

Luke: Look at that coral reef! All those colors.

John: Let's take a sample back to the tub.

Luke: Alright, I'll get some.

Narrator: As Luke took some coral a whole school of tiny purple fish came out.

John: Get some with your net!

Luke: O.K.! O.K.! I hear you.

Narrator: They stayed out for about half an hour more and then went back to the tub.

John: Man, I'm hungry.

Luke: Yea, let's fix some grub.

Narrator: They ate and then rested. Every once in awhile the above ship would call in to see how things were going.

#1 Tech.: Everything alright?

John: Fine. Everything's fine.

#2 Tech.: Just wanted to tell you that two doctors are coming down to check your health.

Luke: O.K.

Narrator: Fifteen minutes later two doctors came down in a bathysphere.

#1 Doctor: You're fine. Your blood pressure is a little high, but you'll be fine.

#2 Doctor: We'll be down tomorrow, the same time.

Narrator: The next morning the two oceanauts went out again, but this time they really got wrapped up in their work, and when I say wrapped up I mean wrapped up! The two had just went down 100 feet and were looking at some very interesting coral.

Luke: Hey, watch out.

John: Watch out for what?

Luke: Turn around and you'll see.

Narrator: John turning around probably almost jumped out of his suit because...........

John: Holy Smokes, we better get out of here and fast.

Narrator: And you know what was coming? The biggest octopus you've ever seen. The oceanauts started swimming fast, but so did the octopus.

Luke: You know something.

John: What?

Luke: I think he is following us.

Narrator: They got back to the tub just in time too, because that octopus was a ten yards away.

John: Whew! That was close.

Luke: A little bit too close for me.

Narrator: The doctors came down around five minutes later.

#1 Doctor: You both look a little bit pale. Did anything happen?

Luke: Oh, no. We just got chased all over by an octopus.

#2 Doctor: Man, you must have been scared.

John: No, not a bit! (Winks at Luke)

#1 Doctor: O.K. We'll be down tomorrow the same time.

Narrator: Time was passing quickly. They had gone out many times in the three month period. On the last time out they took many pictures and samples back to the ship.

#1 Tech: All set.

Luke: Yep.

#2 Tech.: Going up.

Narrator: In just a little while they were upon the surface talking to everyone especially to reporters.

Luke: I'll just say it was a worthwhile trip, and I'm glad I made it!

John: I'll second that motion!

THE END

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41605 *Oceanography-Science of the Sea*

43609 *Underwater Life*

3. *Filmstrips*:

Air-Sea Interaction - Encyclopedia Britannica.

A Career in Oceanography - Encyclopedia Britannica.

Marine Resources - Encyclopedia Britannica.

Ocean Engineering. (Oceanography: Understanding Our Deep Frontier Series) - Encyclopedia Britannica.

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Life in the Sea, Part I. Childrens Press

Life in the Sea, Part II. Childrens Press

Ocean Meteorology, Childrens Press

CAREER EDUCATION PROGRAM

RADFORD CITY SCHOOLS

UNIT TITLE: NUCLEAR ENERGY AND YOUR FUTURE

APPROXIMATE GRADE LEVEL: GRADE 6 OR 7

PROJECT SITE: RADFORD CITY SCHOOLS

PROJECT DIRECTOR: DR. JAMES E. RUTROUGH, SUPERINTENDENT

PROJECT COORDINATOR: RANDY WRIGHT

THE CAREER EDUCATION PROGRAM
THE RADFORD CITY SCHOOLS
1612 WADSWORTH STREET
RADFORD, VIRGINIA 24141
PHONE: 1-703-639-6673

BROAD OBJECTIVE: To help the student understand why knowledge of atomic energy is important.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. Why study atomic energy?	Bulletin Board - Careers in Atomic Energy.	Booklets: 1. Careers in Atomic Energy 2. Employment opportunities in the Atomic Energy Field 3. Selected Occupations Concerned With Atomic Energy
	Research various careers in library and materials in classroom.	
	Report to class.	Books and encyclopedias in library.
	Students write letters for information to Atomic Energy Commission.	
	Make a poster listing careers for class display.	Poster board.
	Read about famous nuclear physicists and tape record information to be used by other students.	Tape recorder.
	Show film.	Film: The Atom and Industry.

BROAD OBJECTIVE: To help the student understand the structure of the atom.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. What is the structure of the atom?	Read about the structure of the atom.	Texts.
	Make a chart for class display on sub atomic particles.	Reference Books: Library Books, Encyclopedias
	View filmstrip.	Filmstrip.
	Have pupils investigate the properties and structure of various elements.	
	Construct models of atoms.	Wire, Clay, Beads, Foam blocks, Toothpicks, Gum Drops.
	Have a bulletin board display of pictures or diagrams of the structure of various elements and their properties.	
	Discuss how the chemist uses the periodic table.	Periodic Table. Filmstrip - Periodic System
	Have pupils find out how scientists discover the many different particles that are found in the nuclei of atoms.	Dr. Durrill - Radford College.

CONTINUED

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
	Discuss how our concept of the atom is constantly changing. View transparency on atoms.	Transparency - Atoms
	Investigation - Sealed boxes.	Sealed boxes with unidentified objects inside.
	Discuss isotapes and atomic structure.	
	Film.	Structures of Atoms.

BROAD OBJECTIVE: To help students understand how nuclear energy is obtained.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIALS
1. What is radioactivity?	Discuss the rays given off by radioactive elements. View transparency on Radioactivity.	Transparency: *Radioactivity*.
	Show film.	Film: *Radioactivity* 74708 13 min.
	Investigations: a. Effects of Radioactivity. b. Observe results of Atomic Disintegrations.	X-Ray Film. Watch or clock with dial painted with a radioactive substance.
	Have some pupils report on the uses and production of x-rays.	
	Discuss devices used to detect radioactivity.	Geiger Counter.
	Film.	*Atomic Energy Inside The Atom*.
2. How is the nucleus of an atom split?	Demonstrate (student) chain reaction.	Marbles, dominoes
	View film.	*Neutrons and the Heart of Matter*.
	Read and discuss - *The Nuclear Reactor*.	Books. Field trip - V.P.I. & S.U. Physics Department.

CONTINUED

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
	Make diagrams and models of Reactors.	Posterboard. Modeling clay, sugar cubes, toothpicks, shoebox, dominoes, pencils.
	View film.	*Nuclear Reactors for Research* (AEC)
	Have a student interview a nuclear physicist at VPI & SU. Tape interview - Find out such information as safeguards that prevent a reactor from turning into a fission bomb.	Tape recorder.
	Read and discuss the cyclotron and other particle accelerators.	Books.
	Film.	*Atom Smashers*.

BROAD OBJECTIVE: To help students be aware of the many uses of nuclear energy.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. How do atomic bombs work?	Have students do reports on the various people who contributed to the success of the first atomic bomb.	Library books.
	View film.	Atomic Power.
	Discuss $E=MC^2$	
	Discuss nuclear fusion.	
	Make diagrams to show how fission and fusion differ.	
	View film.	Living With The Atom.
	Discuss Civil Defense.	Resource person on Civil Defense. Booklets from AEC.
	View film.	Film - 33612 Radiological Defense. 28 min.
2. How is nuclear energy converted?	Read and discuss Nuclear Power Plants.	Books.
	View filmstrip.	A Trip to A Nuclear Plant.
	Make diagrams and/or models of Nuclear Power Plants.	Posters.

CONTINUED

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
	View film.	Film - 66108 Controlling Atomic Energy 15 min.
3. What are radioisotapes?	View filmstrip.	Filmstrip: The Atom: Mans Servant.. Radiation and Its Practical Uses. F158B -(RC)
	Divide class into research groups to investigate use of radioisotapes in: Medicine Industry Agriculture	Books, Booklets, etc.
	View film.	Film: Opportunity Unlimited: Friendly Atoms in Industry (AEC) Field trip and/or resource person from Radford Hospital.

CULMINATING ACTIVITY	RESOURCES AND MATERIAL
Role play the career or careers most interesting in this unit.	Boxes, paint, construction paper, small lumber, and materials needed to depict careers.

CAREER EDUCATION PROGRAM

RADFORD CITY SCHOOLS

UNIT TITLE: IRON WORKING IN VIRGINIA

THE IRON WORKER

APPROXIMATE GRADE LEVEL: GRADE 7

PROJECT SITE: RADFORD CITY SCHOOLS

PROJECT DIRECTOR: DR. JAMES E. RUTROUGH, SUPERINTENDENT

PROJECT COORDINATOR: RANDY WRIGHT

THE CAREER EDUCATION PROGRAM
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1612 WADSWORTH STREET
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INTRODUCTION TO: Iron Working in Virginia
The Iron Worker

This unit on the Lynchburg Foundry is structured for a social studies class. Since the seventh grade curriculum deals with the history and geography of Virginia, The Iron Worker begins as an outgrowth of colonial Virginia history with the discovery of iron ore at Germanna.

From this history, the unit develops all aspects of iron works concentrating on the processes at Lynchburg Foundry in Radford. Close attention is given to the variety of occupations involved in the operation there as many of the students' parents are employed by the foundry. Also, Lynchburg Foundry is the largest industry in the city and will provide future employment for many of our students.

MOTIVATING ACTIVITIES	RESOURCES AND MATERIALS
What things in our school are made of iron?	Virginia History
Take a walk around the school and let the students compile a list of everything they find that is made of iron. Also, have students list the different uses of pipe within the school building.	History of Iron Mfg. - from earliest times in reference books.

BROAD OBJECTIVE: To help the students become aware of the importance of iron and how it's made.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. When was iron first found in Virginia?	Read "Spotswood's Exploration" in text.	Text - Virginia p. 146-148
	Map a large wall chart of the U.S. iron ore deposits.	World Book, Vol. 10, p. 346
2. What things are made of iron?	From a collection of old magazines make a collage of materials made from iron.	Old magazines which students bring in or old magazines discarded by the school library. Poster board.
	Set up a reading table with books of interest about iron.	
3. What is the "recipe" for making iron? 1 ton iron: 1 3/4 tons of ore 3/4 ton of coke 1/4 ton of limestone 4 tons of air	Examine samples of raw materials used in making iron(iron ore, coke, limestone). Display these on a table in the room.	Steel Kit
	Students research to find out where raw materials come from.	Encyclopedias
	Discuss process of making iron and the different kinds of iron.	(Back-up material in science class)
	Make diagram of process on large poster to display. Draw diagram of blast furnace and display.	Poster Board

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
	View filmstrip on how iron is made.	Filmstrip - "How Steel is Made" - from Steel Kit.
	Display steelmaking flow chart.	American Iron & Steel Institute.

BROAD OBJECTIVE: To cause the students to become aware of the iron works at Lynchburg Foundry.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. What products are made at Lynchburg Foundry?	Representative from Lynchburg Foundry to give slide presentation from the Foundry showing the products and how they are made. The slides will also suggest jobs associated with the Foundry.	Lynchburg Foundry Representative(Mr. Tilley).
	Read and display pamphlets and advertisements made available by the Foundry.	Pamphlets - Foundry
	Discuss why the Foundry is located here and its economic importance to the community.	
	Make a model Foundry. (Different shaped. Students can bring boxes and paper rolls. The finished model can be displayed in the library showcase.	Boxes, paper tubes, styrofoam, clay and wood blocks.
	View some of the products made at the Foundry.	Samples from Foundry. Pictures in the Iron Worker.
	Have students become familiar with the Iron Worker, the Foundry publication and have students write a history of the Lynchburg Foundry at Radford.	Iron Worker The Radford Review, "Radford, Va.: Its Location, Growth, and Significance" by D.A.Cannaday.

CONTINUED

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
2. For what are the products from the Foundry used?	Using empty paper rolls, set up a system of pipes to pipe something from one part of the room to another.	Students can collect empty paper rolls.
	Take a field trip to Steven's Supply, a wholesale dealer selling Foundry products.	Field trip.
	Refer to collection of Foundry advertisements. Display these in the room. Articles in the Iron Worker illustrate products in use.	The Iron Worker

BROAD OBJECTIVE: To help the students become aware of the occupations associated with the work processes in the Foundry.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. What are the occupations associated with Lynchburg Foundry?	Have the personnel manager visit the class and tell about the various types of jobs.	Personnel Manager from Lynchburg Foundry (Mr. Bernard Tilley, Mr. Gary Mann, Mr. Coleman)
Business: Personnel manager Company officials Secretary Clerk	Have all the students' fathers who are employed by the Foundry come to class and tell about their particular jobs.	
Operations: Grinder Crane operator Molder Pattern maker Inspector Metalurgist Many others	Make a wall chart listing all the different jobs involved at the Foundry and the qualifications and duties of each.	Large posters. SRA occupational briefs
Maintenance: Plumber Electrician Safety & health officers Custodian Watchman	Students interview their neighbors who work at the Foundry and report to the class on these occupations and comments. The teacher should help make a list of suggested questions for the interview.	

CONTINUED

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
Associated Jobs: City Engineers City Planners	Role play individuals applying for a job at the Foundry. Different students can interview for different jobs.	
2. What are some problems related to occupations in the Foundry?	Individual student research to find out about trade regulations and wage price control which would affect the operation at the Foundry. Then a panel discussion planned by the students could deal with these problems. Students make posters to represent their points of view.	Encyclopedias. Economics books.
	Organized labor could be studied by having a union official and a non-union employee from the Foundry come to the class and discuss labor management problems and the advantages and disadvantages of a union. (These persons might be interviewed if they can't come in person.)	Labor official from Foundry. Non-union employee. Pamphlet, "Why Unions", AFL-CIO.
	Role play labor and management discussions of problems.	

CONTINUED

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
	Collect any news articles dealing with labor or union relations and make a bulletin board display.	Daily newspaper - students bring to class.
	Discuss the pollution factor at the Lynchburg Foundry. Resource person from Foundry should come to class to explain the recently installed filtering systems.	Resource people
	Have a Virginia Air Pollution Control Board official come to class to discuss the level of air pollutants in Radford.	Virginia Air Pollution Control Board official.
	Class discussion of the importance of the Foundry to the community vs. the pollution it creates.	

CULMINATING ACTIVITY:

CULMINATING ACTIVITY	RESOURCES AND MATERIAL
Set up a model Foundry in the room. Plaster of paris can be used to mold items which will be the products. Different stations set up in the room could include pattern making, molding, painting, advertising, production management, inspection, storage, maintenance, foreman. Enough products could be produced so that each student may have one to take home.	(Molding comparable to casting at the Foundry.)

SUBJECT MATTER TIE-IN

Science

1. Magnetic properties(make electromagnets)
2. Centrifugal force
3. States of matter
4. Thermometer and temperature
5. Soil conditions, terrain, why we use one kind of pipe one place and another somewhere else.
6. Safety
7. Pollution, air and noise
8. Alloys
9. Rate of flow, gravity
10. Study of simple machines
11. Process of making iron and steel.

Language Arts

1. Interviewing people
2. Advertising the products
3. Writing orders
4. Reading orders - where to be shipped
5. Vocabulary of the trade
6. Letters for information
7. Stating fathers' jobs
8. Reports, research
9. Write own stories and poems

Math

1. Thermometer-reading
2. Measurement-diameter, linear, liquid
3. Salaries
4. Cost of raw materials(figuring profits)
5. Selling products
6. Geometric shapes
7. Weights of pipe
8. Distances of shipments

Music

1. Rhythm of sounds
2. Sounds of different sized pipes
3. Sounds of metal on metal, metal on wood
4. Write foundry songs
5. Sing the foundry song

Art

1. Sketch foundry
2. Sculpture
3. Designs in smoke
4. Making charts and posters
5. Building a model of the foundry
6. Colors involved in metals
7. Drawing pictures
8. Paint metal pieces
9. Safety posters

Physical Education

1. Chin-ups
2. Movements with pipes
3. Simulate motions

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2. Periodicals:

Iron Worker, Lynchburg, Va.: Lynchburg Foundry Company, Hudson, V. O., Radford Review, Radford, Va.: Radford College, "Radford, Va.: Its Location, Growth and Significance," D. A. Cannaday, 1958.

3. Pamphlet:

"Why Unions" AFL-CIO

4. Chart: American Iron and Steel Institute

5. Steel Kit: United States Steel Corporation including filmstrip, "How Steel is Made."

CAREER EDUCATION PROGRAM

RADFORD CITY SCHOOLS

UNIT TITLE: "WHO DOES WHAT? A DICTIONARY OF CAREERS"

APPROXIMATE GRADE LEVEL: GRADE 7

PROJECT SITE: RADFORD CITY SCHOOLS

PROJECT DIRECTOR: DR. JAMES E. RUTROUGH, SUPERINTENDENT

PROJECT COORDINATOR: RANDY WRIGHT

THE CAREER EDUCATION PROGRAM
THE RADFORD CITY SCHOOLS
1612 WADSWORTH STREET
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INTRODUCTION:

This unit is designed for the 7th grade level in language arts and/or reading.

It shows the different occupations involved in dictionary development.

It's final product will be a reference book for students' basic career study.

BROAD OBJECTIVES:

1. To help students become aware of the various parts in a dictionary entry: diacritical markings, stress marks, definitions, word class, citation, etymology.
2. To help students develop a dictionary by putting various occupations to work.
3. To help students view the dictionary as a tool of necessity.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
1. How and why was the first dictionary produced?	Brief introduction by teacher and discussion from class. Announce extra credit can be achieved by writing report or drawing a chart on history of dictionaries.	World Book Encyclopedia A Structural History of English.
2. What does a dictionary tell us?	Brainstorm, then do selected exercises for clearing understanding.	Our Language Today, 7, Chapter 11 Words and Ideas 7, pg. 339-345 Growth in English, pg.394 Adventures for You, p. 473-474.
	View transparencies.	Book of transparencies and masters. Joys and Journeys, Skillbook. McHarg Library.
	View Filmstrip, "What's in The Dictionary?" Color, record and script.	
3. What dictionary terms should we know?	Use entry from dictionary or overhead. Label parts and list terms: Entry, guide words, diacritical marks, pronunciation key, word classes. accent marks, parenthesis, etymology.	Transparencies. Preceding grammar book references.

CONTINUED

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
	Give them 5 words they are probably not familiar with in sentence which indicate meaning. They are to alphabetize and then write as a dictionary entry, including all parts. Possibilities: 1. Lexicographer 2. Linguist 3. Grammarian 4. Etymologist 5. Secretary	
4. In what occupation might you use a dictionary?	Brainstorm session. Bring in examples of different kind of dictionaries used in our home - put on display.	Chalkboard, chalk.
5. What are the kinds of dictionaries? general and specialized.	Look at dictionary exhibit and classify them.	Dictionaries students brought from home.
6. What kind of dictionary could we use for our study on careers?	Survey on parents' occupations. Do a small index card (size depending on container) which writes the career like a dictionary entry.	Index cards, container.
7. How do we compile information for publication?	Field trip to Commonwealth Press.	

CONTINUED

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
8. How can we organize ourselves to make a dictionary?	Brainstorm job titles. When about 20 jobs are listed, divide the class into groups to do jobs with various occupations. Each group will need: (1) a linguist - Do pronunciation (2) grammarian - Do definitions, word class and sentence (3) etymologist - Do history of word, its root, and various prefixes and suffixes. (4) secretary - Record final draft on cards (5) part-time illustrator Groups can be divided as follows: Occupations beginning with Group I - A, B, C II - D, E, F III - G, H, I, J, K IV - L, M, N, O V - P, R, S VI - T, U, V VII - W, X, Y, Z	Chalkboard and chalk. *Encyclopedia of Careers and Vocational Guidance*, Vol. I, II. SRA Briefs - Proofreaders #373.
9. How important is accuracy in information before publication?	Resource person to discuss proper pronunciation, fitting definitions to words, career opportunities, salaries, etc.	A grammarian or publisher.

CONTENT QUESTIONS	TECHNIQUES AND ACTIVITIES	RESOURCES AND MATERIAL
10. How can we put our dictionary together?	Student aid types dictionary directly from index cards. Illustrator work with her. Groups reorganize to: Group I - Put in guide words, numbers pages. Group II- Proofread, put in diacritical markings. GroupIII- Write an introduction, do title page. Group IV- Make a pronunciation key. Group V - Do any additional reference pages. Group VI- Staple, bind, and cover book. GroupVII- Make a poster to introduce dictionary to school and display in library, display case, etc.	

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Filmstrip:

"What's in the Dictionary?" McHarg Library

Briefs - Proofreaders #373